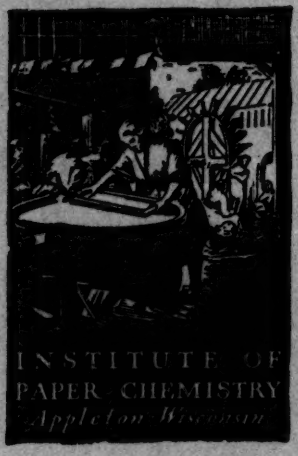
PAGES 1-78

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

SEPTEMBER · 1952

Volume 23 Number 1

THE cut on the cover is a reproduction of the Bookplate of The Institute of Paper Chemistry. The drawing, entitled, "the Papermaker," first appeared in 1698 in the Book of Trade by Christoff Weigel. This particular reproduction has been copied from an illustration appearing on page 43 of Dard Hunter's book "Papermaking Through Eighteen Centuries," published in New York in 1930 by William Edwin Rudge. THE INSTITUTE is greatly indebted to Mr. Hunter for permission to use the illustration.

AUTHOR INDEX TO BOOKS

American Management Association ... 1
Balston, J. N., comp. ... 1
Cottrall, L. G. ... 1
Harkins, W. D. ... 2
IFO-Institut für Wirtschaftsforschung 1
Jones, T. S. G. ... 1
Loring, H. S., ed. ... 1
Luck, J. M., ed. ... 1
Mackinney, G., ed. ... 1
Molloy, E., ed. ... 1
Ohio River Valley Water Sanitation Commission. *Metal-finishing Industry Action Committee* ... 2
Philadelphia Quartz Company ... 2
Talbot, B. E., comp. ... 1
Technical Association of the Pulp and Paper Industry ... 2
Vail, J. G. ... 2
Walden, Sons & Mott, Inc. ... 2
West, C. J., comp. ... 1
Wills, J. H. ... 2

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page number indicates a patent abstract.

Abadie, F. A. ... 13
Acherman, W. L. ... 14
Addison-Semmes Corporation ... P 62
Aeldert, A. ... 25
"Alaric." ... 23
Allied Chemical & Dye Corporation .. P 75
American Can Company ... P 62
American Cyanamid Company ... P 60
American Tobacco Company ... P 69
Anderson, G. W. ... 50
Andersson, N. ... 28
Andre Paper Box Co. ... 36
Andrews, P. ... 41, 42
Anway, H. W. ... P 61
Apgar, C. W. ... P 68
Armour and Company ... P 76
Aronovsky, S. I. ... 50
Atlanta Paper Company ... P 62
Auchter, R. J. ... 21
Ayers, L. R. ... 17
Aziz, P. M. ... 15
Bajoria, N. K. ... 5
Bakelite Company ... 17
Bancroft, G. H. ... P 77
Bancroft, J., and Sons Co. ... P 74
Barnes, N. F. ... P 64
Barr, J. A., Jr. ... P 76
Barr, W. F. ... 23
Barton, G. M. ... 13
Bascom, F. ... P 73
Basu, S. N. ... 19
Batson, W. G. ... 36
Bauer, L. J. ... 25
Beamesderfer, J. W. ... 40, 41
Belcher, D. ... P 77
Bell, G. E. ... 29
Bemis Bro. Bag Company ... P 75, P 77
Bemiss-Jason Company ... P 66
Bencich, J. S. ... P 66
Bennett, W. D. ... 58
Beyer, D. L. ... 54
Bhat, R. V. ... 4, 20, 56
Boelter, L. M. K. ... 17
Bollaert, E. M. ... P 61
Borruso, Domenico ... 6
Bouttemy, M. ... 11, 12
Boxboard Containers ... 7, 45
Boyce, C. W. ... 33
Boyd, T. ... P 71
Brady, C. V. ... P 75
Braun, C. H. ... 45
Braunstein, J., Jr. ... P 65
Bremer, G. ... 31
Breston, J. N. ... 15
Brown, J. ... 33
Brunton, H. D. ... 42
Bryce, J. B. ... 22
Buchan, J. ... P 65
Buchanan Electrical Products Corporation ... 31
Buckeye Cotton Oil Company ... P 64
Burger, M. ... P 66
Burnett, L. K. ... 43
Burt, F. N., Company, Inc. ... P 65
Burt, J. ... 55
Buttery, K. T. ... P 66
Byrne, M. ... P 74
California Cedar Products Company .. P 73
Calkin, J. B. ... 34
Callinan, T. D. ... 22
Camilli, G. ... P 71
Campbell, R. D. ... 46
Campbell, W. G. ... 56
Canadian Gypsum Company Limited .. P 61
Canadian Pulp and Paper Association. *Technical Section. Niagara Branch* ... 21, 33, 55
Carey, T. L. ... P 74
Carpenter Paper Company ... 33
Carr, G. J. ... 58
Carroll, B. ... 47
Casebolt, G. S. ... P 60
Casey, J. P. ... 36
Celanese Corporation of America ... P 75
Cellulose Development Corporation Ltd. ... 5
Chalkley, L. ... 36
Chase, A. J. ... 40, 41
Chemical Engineering ... 47
Chempump Corporation ... 29
Clouse, J. L., Sr. ... 55
Cole, G. G. ... 21
Collins, R. ... 34
Columbian Ribbon and Carbon Manufacturing Company, Inc. ... P 72
Combustion Engineering-Superheater, Inc. ... P 61
Cooper, A. M. ... 50
Copson, H. R. ... 15
Corte, H. ... 43
Craig, F. A. ... 6
Cueto, C. ... 12
Dadswell, H. E. ... 57
Davidson, G. F. ... 10
Day, F. T. ... 29, 30, 37, 46
Dean, C. W. ... P 64
De Feber, J. ... 27
Deline, I. A. ... P 67
Desikachar, N. ... 58
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler ... P 64
Dickinson, T. A. ... 54
Dobberstein, H. ... 24
The Dow Chemical Company ... P 60
Du Bois, H. A. ... P 76
Ducé, R. ... 50
Dumont Enterprises, Inc. ... 37
du Pont de Nemours, E. I., and Company ... P 75
Dusenbury, M. R. ... 53
East Rutherford Syringes, Inc. ... P 67
Eastman Kodak Company ... P 77
Edelman, S. ... 8
Edelstein, S. M. ... 48
Eden, G. E. ... 54
Edwards, F. I. ... 12
Edwards, N. L. ... 21
Egan, F. W., & Company ... P 70
Ellefsen, Ø. ... 13
Elliott, N. J. ... 30
Empire Box Corporation ... P 62
Engel, E. W. ... P 71
Enzman, R. ... 8
Ernst, A. J. ... 50

Ets. A. Rouquet et Gendres 27
Etheridge, O. R. 30
Evans, J. C. W. 35
Evans, R. S. 13
F. 11
Fairfield Paper and Container Company ..... P 69
Farrah, G. A. 7
Fibreboard Products Inc. ..... P 74
Fitzgerald, O. A. 25
Floyd, D. E. ..... P 76
Forrer, H. W. ..... P 62
Frankenstein, W. P. ..... P 66
Frase, R. E. ..... P 62
Frede, H. H., & Company Inc. ..... P 63
Führlbeck, E. 39
G. C. I. 52
Gadd, G. O. 20
Galloway, J. R. 55
Gardner, H. S. 18
Gardner, J. A. F. 13, 53
Gaughan, P. J. 15
Gaylord Container Corporation 46
General Electric Company P 64, P 71, P 72
General Mills, Inc. ..... P 76, P 77
General Motors Corporation ..... P 66
George, H. O. 37
Gerson, F. ..... P 72
Ghose, S. N. 19
Gianni, E. 51
Gibbon, E. R. 47
Gillet, A. 57, 58
Giolito, E. J. ..... P 71
Godard, H. P. 15
Golden, L. B. 14
Goodwell, F. C. 55
Gothner, K. F. 26
Grangaard, D. H. ..... P 75
Gray, A. G. ..... P 75
Gray, H. M. 33
Guettler, H. W. ..... P 61
The Gummed Products Company ..... P 73
Haake, A. P. 9
Hackerman, N. 15
Hagan, O. C. ..... P 73
Hall, W. P. ..... P 74
Hamm, A. L. ..... P 61
Hanright, R. A. 49
Hantman, B. 27
Harrison, W. 11
Harva, O. 44
Hatch, G. B. 15
Hawkins, G. A. 17
Hawley Products Company ..... P 70
Heinle, C. W. ..... P 62
Heinzelmann, W. C. 38
Henderson, W. W. 53
Hendry, I. F. 48
Hercules Powder Company ..... P 60, P 74
Herrlinger, P. W. ..... P 73
Heyn, A. N. J. 16
Heywood, V. E. ..... P 67
Hickin, R. J. ..... P 67
Hickman, J. S. 55
Hildenbrand, A. 26
The Hinde & Dauch Paper Company ..... P 67
Hoel, L. W. ..... P 70
Hollefriend, N. H. 24
Houck, L. S. 30
Hough, L. 41, 42
Hubbard, R. E., Jr. 40
Hughes, D. A. ..... P 77
Hull, R. O. ..... P 75
Hultin, O. H. ..... P 70
Humfeld, G. P. ..... P 72
Hutchins, M. C. 14
Hynes, R. W. 55
Imperial Chemical Industries Limited. P 63
Industrial and Engineering Chemistry 15
Industrial Tape Corporation ..... P 71
Institut für Forschung im Graphischen Gewerbe 44
Irmscher, H. O. ..... P 72
Irwin, R. A. 18
Jarrell, J. G. 12
Jayme, G. 14
Jeffrey, D. C. ..... P 69
Jones, E. 8
Jones, E. E. 54
Jones, J. K. N. 10, 41, 42
Jones, M. R. 21
Jordan, W. A. ..... P 77
Kahler, H. L. 15
Kalamazoo River Improvement Company 15
Kasser, A. 13
Kenetti, A. 3
Kerping, P. 37
Kesting, E. 13
King, J. A. ..... P 65
Kingsbury, R. M. 50
Kingsley, D. G. ..... P 67
Kirk, W. J. E. 8
Klaner, J. F., Jr. ..... P 76
Knudson, V. G. ..... P 62
Kolodny, S. ..... P 67
Kowal, M. H. ..... P 62
Kröner, K. 56
Kuhn, H. S. 29
Kumblad, W. S. 36, 47
Laird, B. C. 11
Laird, J., & Son Limited ..... P 65
Lalk, R. H. ..... P 60
Lane, I. R., Jr. 14
Lang, M. 49
Langston, S. M., Co. ..... P 68
Langworthy, M. L. 24
Lauring, E. A. 8
Leaf, R. L., Jr. 6
Leckie, A. 45
Lederman, L. F. 3
Lehrman, L. 15
Lenz, F. B. ..... P 70
Lessmann, G. P. ..... P 69
Lewis, R. G. ..... P 65
Liebert, E. 39
Loeffler, H. H. 32
London, A. 8
Lubersky, I. ..... P 74
Lucas, R. T. 22
Lundgren, K. D. 41
Maass, O. 43
MacArthur, J. E., Jr. ..... P 66
McCabe, L. C. 3
McDonald, I. R. C. 56
McEwen, J. M. 19
McGarry, J. A. ..... P 71
McKenzie, D. I. ..... P 74
McLaren, K. 38
McLaughlin, C. G. ..... P 68
McMillan, J. H. 32
McNeel, W., Jr. 22
McWhorter, H. L. 35
Malm, C. J. 11
Marconi Instruments Ltd. 40
Marks, H. C. 15
Mathes, K. N. ..... P 72
Mayberry, W. G. 29
Mayfield, E. E. ..... P 60
Mazumdar, A. K. 10
Meincke, A. M., & Son, Inc. ..... P 75
Meller, R. B. ..... P 66
Meskat, W. 43
The Meyercord Company 18
Mid-West Bottle Cap Co. ..... P 72, P 73
Mikelson, W. 28
Milprint, Inc. ..... P 65
Modern Packaging 32
Monsanto Chemical Company ..... P 71
Montgomery, R. 9
Moraine Box Company ..... P 74

Morehead, F. F. 52
The Morgan Crucible Company, Ltd. . 9
Morris, V. N. ..... P 71
Morrison, H. S. ..... P 69
Mount, K. 45
Mueller, M. E. ..... P 61
Müller, O. 24
Müller-Rid, W. 27
Mulligan, L. ..... P 71
Nachtman, P. 52
National Folding Box Company . P 62, P 63
National Gypsum Company ..... P 69
National Tea Packing Company, Inc. . P 72
Nemerow, N. L. 51
Newman, D. A. ..... P 72
Nicholson, P. C. 33
Nickerson, R. F. 9
Niethammer, H. 56
Nord, F. F. 24
Nordling, R. 30
Noreen, E. D. ..... P 68
Nuessle, A. C. ..... P 74
The Ohio Boxboard Company ..... P 67
O'Mahony, E. D. ..... P 72
Organization for European Economic Co-operation. *Pulp and Paper Committee* 34
Ottinger, A. F. 75
Pacault, A. 12
Package Machinery Company ..... P 68
Pal, K. B. 10
Palmer, F. D. ..... P 68
Paper Mill News 8
Paper Patents Company ..... P 70, P 76
Parsons, B. M. 42
Pascoe, T. A. 22
Pausch, G. 27
Pearl, I. A. 54
Perry, J. W. 12
Perry, L. M. 38
Philippi, H. 26
Pineo, M. B. 4
Pintell, M. H. ..... P 70
Pneumatic Scale Corporation ..... P 70
Prati, G. 53
Premo, R. A. 21
Price, C. C. ..... P 74
Pulp & Paper 35
Pungs, L. 56
Raber, C. F. 30
Radio Corporation of America ..... P 72
Rao, T. V. S. 58
Reaves, J. M. ..... P 66
Reese, J. E. 53
Reid, L. S. 33
Rhoads, J. E., & Sons 25
Ricketts, R. H. 38
Rigby, C. H. ..... P 63
Roberts, C. B. ..... P 69
Roberts, F. W. ..... P 68
Robson, H. T. 26
Rohm & Haas Company 59
Romney, W. L. 18
Rosen, S. ..... P 65
Rosencranse, C. R. ..... P 76
Rosten, M. M. ..... P 76
Rudolfs, W. 51
Ruf, E. P. 18
Saha, P. K. 10
Sargeant, J. A. 46
Sarkar, P. B. 10
Scheid, L. J. ..... P 64
Schmidt, E. 52
Schroder, G. ..... P 63
Scott, D. S. 53
Scott, W. C. 49
Seaboard Container Corporation .... P 68
Sears, G. R. 23
Seidl, R. J. 50
Seymour, R. B. ..... P 63
Shellmar Products Corporation .... P 66
Shenefelt, R. D. 22
Shrader, R. E. 55
Shuldener, H. L. 15
Sieg, K. ..... P 68
Singh, M. M. 20, 56
Sippola, A. I. 25
Smith, F. 9
Smith, G. D. 11
Smith, G. H. 28
Sonnenberg, R. ..... P 72, P 73
Sooy, W. 18
Sperre, A. 21
The Sperry Corporation ..... P 68
Spilling, H. 49
Society of Dyers and Colourists. *Fastness Tests Co-ordinating Committee. Light Fastness Sub-committee* .. 39
Southern Pulp and Paper Manufacturer 35
Srikantan, D. L. 16, 34, 44
Staats, P. L. 38
Stabilag Company, Ltd. 21
Standard Oil Development Company ..... P 73
Stapling Machines Company ..... P 67
Stearn, W. T. ..... P 75
Stearns, E. I. 14
Steele, G. H. ..... P 67
Stephen, H. W. 4
Stevens, G. de 24
Stilbert, E. K. ..... P 60
Stolp, C., Jr. ..... P 75
Stovroff, H. 55
Stowitts, F. W. 19
Sturkin, R. C. ..... P 70
Sudrabin, L. P. 15
Sulphite Products Corporation ..... P 75
Sundstrom, F. O. 14
Sussman, S. 15
Suter, C. A., Company, Inc. 45
Sutherland Paper Company ..... P 66
Svensson, A. 41
Tabb, C. B. 13, 50
Tall Oil Association 53
Tanaevsky, O. 12
Tanghe, L. J. 11
Tawney, P. O. ..... P 73
Taylor, E. F. ..... P 69
Taylor, H. W. 38
Technical Association of the Pulp and Paper Industry 39, 40
Technical Association of the Pulp and Paper Industry. *Chicago Section* 36
Technical Association of the Pulp and Paper Industry. *Empire State Section* 21, 32, 55
Technical Association of the Pulp and Paper Industry. *Fibrous Agricultural Residues Committee* 51
Thode, E. F. 40, 41
Thomson, A. G. 22
Treasure Masters Corporation ..... P 62
Trost, H. B. 12
Trundle, R. C. 48
Uhlig, H. H. 15
Ulmer, R. C. 15
Umminger, O. 41
United States Envelope Company .. P 67
United States Rubber Company .... P 73
Uong, D. D. 55
Urlings, J. 57, 58
Vallandigham, V. V. 36
Van den Akker, J. A. 23
Vanderbilt, B. M. ..... P 73
Van Dyke, J. W. 47
Verein der Zellstoff- und Papier-Chemiker und -Ingenieure 5
Vickery, F. W. ..... P 67
Vickerys Limited ..... P 67
Virmani, K. C. 4
Vogel, R. E. 7

Waber, D. ..... P 65
Wagner, E. ..... P 64
Wagner, H. L. 49
Waldheim, G. von 34
Walsh, R. H. 55
Walter, K. 27
Wardrop, A. B. 57
Ware, H. 36
Waters, V. F. 35
Watervliet Paper Company ..... P 65
Weatherford, H., Jr. ..... P 66
Weaver, E. 55
Weetman, B. 24
Wegener, A. 45
Weidner, C. L. ..... P 71
Weidner, J. P. 7
Weiss, C. B. ..... P 64
Wells, H. D. ..... P 69
Wells, S. D. ..... P 65
Wells, W. J. ..... P 65
Welsh, O. ..... P 68
Welshenbach, C. D. ..... P 67
Wertheim, F. C. 3
Westinghouse Electric Corporation .. P 69
Wetli, C. A. 32
Weyerhaeuser Timber Company ..... P 61
Wheatland, A. B. 54
Whitaker, D. R. 16
Williams, A. E. 15
Williams, A. H. ..... P 69
Williamson, M. I. ..... P 62, P 63
Wink, W. A. 23
Wise, L. E. 10
Wittcoff, H. ..... P 77
Wood, H. F., Jr. 26
Wood, J. W. 15
Wörner, G. 14
Wray, W. E. ..... P 69
Yarber, C. J. ..... P 75
Young, A. E. ..... P 60
Zweiling, G. 45

BOOK REVIEW

Mosher, R. H., ed. 80

BULLETIN

of

THE INSTITUTE of PAPER CHEMISTRY

AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

SEPTEMBER · 1952

Volume 23 Number 1

LIBRARY NOTES

The Bulletin of The Institute of Paper Chemistry is published monthly at Appleton, Wisconsin, by the Board of Trustees of The Institute of Paper Chemistry. Entered as Second Class matter November 13, 1930, at the postoffice at Appleton, Wis., under the act of August 24, 1912. Printed in U.S.A.

THE INSTITUTE OF PAPER CHEMISTRY

OFFICERS

ERNST MAHLER	Chairman of the Board
D. C. EVEREST	Vice-Chairman of the Board
JOHN L. RIEGEL	Vice-Chairman of the Board
WESTBROOK STEELE	President
JOHN G. STRANGE	Vice-President—Treasurer
C. B. SITTERSON, JR.	Secretary
DORIS PICKERT	Assistant Secretary

BOARD OF TRUSTEES

NATHAN M. PUSEY, President of Lawrence College, ex officio
WESTBROOK STEELE, President of The Institute of Paper Chemistry, ex officio

For the term expiring in 1953

DAN K. BROWN, Neenah Paper Company, Neenah, Wis.
GEORGE E. DYKE, Robert Gair Company, New York, N.Y.
STUART E. KAY, International Paper Company, New York, N.Y.
A. B. LAYTON, Crown Zellerbach Corporation, San Francisco, Calif.
KARL E. STANSBURY, Thilmany Pulp and Paper Company, Kaukauna, Wis.

For the term expiring in 1954

SYDNEY FERGUSON, The Mead Corporation, Dayton, Ohio.
DONALD S. LESLIE, Hammermill Paper Company, Erie, Pa.
ERNST MAHLER, Kimberly-Clark Corporation, Neenah, Wis.
W. IRVING OSBORNE, JR., Cornell Paperboard Products Company, Chicago, Ill.

For the term expiring in 1955

D. C. EVEREST, Marathon Corporation, Rothschild, Wis.
DAVID L. LUKE, JR., West Virginia Pulp and Paper Company, New York, N.Y.
GEORGE OLMSTED, JR., S. D. Warren Company, Boston, Mass.
HERBERT T. RANDALL, The Champion Paper and Fibre Company, Hamilton, Ohio.
JOHN L. RIEGEL, Riegel Paper Corporation, New York, N.Y.

STANDING COMMITTEES OF THE TRUSTEES

EXECUTIVE COMMITTEE: Ernst Mahler, Chairman; D. K. Brown, George E. Dyke, David L. Luke, Jr., and Karl E. Stansbury.
INVESTMENT COMMITTEE: Ernst Mahler, Chairman; D. K. Brown, John G. Strange, and Ralph J. Watts.
COMMITTEE ON ACADEMIC POLICY: Nathan M. Pusey, Chairman; Rex Hovey, Harry F. Lewis, Ernst Mahler, John L. Riegel, Westbrook Steele, and John G. Strange.

Books and Pamphlets Added to the Library During August

BEATERS AND BEATING

COTTRALL, LESLIE G. Introduction to stuff preparation for paper making. London, Charles Griffin & Company Limited [c1952] 183 p.

BIOLOGICAL CHEMISTRY

ANNUAL REVIEW of biochemistry. J. Murray Luck, editor; Hubert S. Loring and Gordon Mackinney, associate editors. Stanford, Annual Reviews, Inc., 1952. v. 21. 781 p.

CHROMATOGRAPHY

BALSTON, J. N., and TALBOT, B. E., comp. A guide to filter paper and cellulose powder chromatography. Ed. by Tudor S. G. Jones. London, H. Reeve Angel & Co. Ltd., and Maidstone, W. & R. Balston Ltd., c1952. 145 p.

INDEXES

COLLECTIVE formula index to Chemical Abstracts, volumes 14-40, 1920-1946. Washington, The American Chemical Society [c1951-52] 2 v. 2077 p.

PACKAGING

AMERICAN MANAGEMENT ASSOCIATION. How industry is solving its packaging problems. Packaging series number 36. New York, The Association [c1951] 39 p.

AMERICAN MANAGEMENT ASSOCIATION. Military packaging requirements; outlook for materials and equipment. Packaging series number 37. New York, The Association [c1951] 60 p.

PACKAGING and display encyclopaedia. [3d ed. E. Molloy, general editor] London, George Newness Limited [c1952] 880 p. (*cf.* B.I.P.C. 20:465).

PAPER MAKING AND TRADE

IFO-INSTITUT FÜR WIRTSCHAFTSFORSCHUNG. Papier und Druck; Rückblick, Stand, Ausblick für Industrie, Grosshandel, Einzelhandel. Bearbeitet in Verbindung mit den Fachverbänden von Industrie und Handel. Deutsches Branchenhandbuch für Industrie und Handel 1952, Lieferung 2. München, Das Institut, 1952. 31 p.

PAPER MAKING AND TRADE—BIBLIOGRAPHY

WEST, CLARENCE J., comp. Pulp and paper manufacture; bibli-

ography, 1951 and United States patents 1950-1951. New York, Technical Association of the Pulp and Paper Industry, 1952. 420 p.

SILICA AND SILICATES

VAIL, JAMES G. Soluble silicates, their properties and uses. Assisted by John H. Wills and the staff of Philadelphia Quartz Company. New York, Reinhold, 1952. v. 1: Chemistry. 357 p.

STREAM POLLUTION

OHIO RIVER VALLEY WATER SANITATION COMMISSION. *Metal-finishing Industry Action Committee.* Planning and making industrial waste surveys. [Cincinnati] The Commission, c1952. 46 p.

SURFACE CHEMISTRY

HARKINS, WILLIAM D. The physical chemistry of surface films. With a foreword by Peter Debye. New York, Reinhold, 1952. 413 p.

TRADE DIRECTORIES

WALDEN'S ABC guide; edition for 1952. The annual paper directory for manufacturer, merchant, converter. [New York, Walden, Sons & Mott, Inc.] 1952. 508 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ABSTRACTING

LEDERMAN, LORNA F. Abstracting and indexing periodicals of chemical interest published in the United States. J. Chem. Education 29, no. 8: 396-401 (August, 1952).

Abstracting and indexing services of chemical interest are listed under 26 subject headings; information on the publication date, size of the periodical, subscription price, and publisher's address is given for each publication. A title index is appended. 2 references. L.C.

ACID PLANT

KENETTI, ARNO. The gas absorption theory and its application to the sulfite acid tower. Svensk Papperstidn. 55, no. 14: 477-82 (July 31, 1952). [In Swedish]

Following a brief discussion of the general gas-absorption theory, a review of calculations applied to the sulfite acid tower is presented. 4 figures and 10 references. E.S.

AERONAUTICS IN FORESTRY

ANON. Operation budworm. Pulp Paper Mag. Can. 53, no. 8: 114-16, 119-20 (July, 1952).

A successful airplane DDT-spraying operation to combat an advanced infestation of the spruce budworm in the forests at the head of the Upsalquitch River, N.B. is described. 7 illustrations. L.C.

AIR CONDITIONING

WERTHEIM, FRANKLIN C. Dehumidification and its effect in the printing industry. Printing Equip. Engr. 82, no. 11: 31-2 (August, 1952).

The problems caused by excess humidity in the graphic arts industry and methods for removing moisture from air (complete air conditioning, the use of hygroscopic substances, and the refrigeration-unit method) are described. A table with recommended humidities for the printing industry is included. 1 table. E.S.

AIR POLLUTION

MCCABE, LOUIS C. Atmospheric pollution. Ind. Eng. Chem. 44, no. 8: 105-7A (August, 1952).

A brief reference is made to fog-filter type scrubbers developed by Kropp and Simonsen for the absorption of fatty-acid odors, hydrogen sulfide, and sulfur dioxide from air streams containing these contaminants. The equipment consists of two cylindrical spray chambers connected by a crossover duct. The gases pass through these in a centrifugal motion and the scrubbing

medium is introduced through a number of fog nozzles; a high degree of atomization is obtained by means of a special pump. A 3% solution of soda ash in water used as the scrubbing medium will reduce the sulfur dioxide concentration to less than 1 p.p.m. In the case of hydrogen sulfide, an 8% caustic soda solution was found to give the highest absorption efficiency and to remove the gas completely from the air. A fume-disposal system for an asphalt oxidizing plant is also mentioned briefly. 2 tables, 2 figures, and 1 reference. E.S.

ALKALINE PROCESSES

PINEO, MALCOLM B. Variables in kraft pulping. Paper Mill News 75, no. 32: 8, 10, 15 (Aug. 9, 1952); Pulp & Paper 26, no. 9: 75-6 (August, 1952); Southern Pulp Paper Manuf. 15, no. 9: 52, 54, 56 (September, 1952).

The kraft pulping industry must produce a uniform-quality product, if it is to be acceptable to the paper manufacturer. The author discusses the influential factors and procedures by which a uniform quality of bleachable kraft for high-brightness grades can be produced from pines and hardwoods. It is shown that uniform quality can be obtained through consistent steady operation and adequate process-control methods. The program must necessarily begin with the raw material; a change in wood species will vary pulp qualities more than any other single factor. However, even though the wood species may remain unchanged, the moisture content has a marked effect upon uniform operation. Standardized methods of chip preparation and systematic uniform cooking schedules must be maintained. Emphasis is placed upon the need for controlling the relationship between active cooking chemicals and ovendry chips; the ratio of total liquor volume to the wood charged to the digester should be standardized and adjusted for moisture changes. An economical operation of the washing and screening processes can be obtained by the proper selection of equipment and adequate instrumentation to meet the required standards. There is no substitute for uniformity of operation and for consistent repetition of uniform schedules. E.S.

STEPHEN, HOWARD W. Studies of variability in a kraft mill. Tappi 35, no. 8: 367-70 (August, 1952).

Studies of isolated stages in pulp mill manufacture to determine the limits of variability and to identify the causes are described. A general analysis of variance for analyzing the hardness of the stock and the activity of white liquor and the standard deviation to analyze fiber loss at the shaker screen were employed. 6 tables and 1 reference. E.S.

ARUNDO DONAX

BHAT, R. V., and VIRMANI, K. C. Indigenous cellulosic raw materials for the production of pulp, paper and board. Part I. Pulps for writing and printing papers from *Arundo donax*. Indian Forester 77, no. 6: 365-73 (1951); Indian Pulp and Paper 6, no. 11: 459-64 (May, 1952).

Since vast quantities of *Arundo donax* are found in certain parts of India, an investigation was carried out at the Forest Research Institute at Dehra Dun to test the suitability of pulp made from this reed for papermaking. The results showed that digestion of *Arundo donax* by the sulfate process for six hours, using 17-18% total alkali in a 4% concentration at 162°C. for the first hour and 153° for the remaining period, yielded an easy bleaching

pulp from which writing and printing papers with satisfactory strength properties can be made. The reeds must be crushed prior to cooking. The soda process can also be used for pulping; however, slightly lower yields are obtained than with the sulfate process. Considering the quantity of alkali required for the digestion, bleach consumption, yields and strength properties of the pulp, and cost and availability of the reed, *Arundo donax* is a useful papermaking raw material. It can be either used alone or mixed with other pulps (sabai grass or bamboo) for the production of writing and printing papers. 3 tables and 11 references. E.S.

ASSOCIATIONS

ANON. British Gelatine and Glue Research Association. Paper Making and Paper Selling 71, no. 2: 46-8 (Summer, 1952); *cf.* B.I.P.C. 22: 355.

The history and activities of the new research association are reviewed briefly. E.S.

ANON. PATRA'S majority. Paper Making and Paper Selling 71, no. 2: 26-39 (Summer, 1952).

To mark its 21st year of operation, the Printing, Packaging and Allied Trades Research Association is arranging a series of exhibitions and conferences throughout the country. The services and recent activities of the organization are outlined. 8 illustrations. E.S.

BAJORIA, N. K. Indian Paper Mills Assn. annual meeting. Indian Print & Paper 17, no. 71: 28-9 (April, 1952).

Excerpts from the address presented at the 10th annual meeting of the association are given, in which the conditions in the Indian paper industry during the past year are reviewed. E.S.

VEREIN DER ZELLSTOFF- UND PAPIER-CHEMIKER UND -INGENIEURE. Report of the 1952 annual meeting of "Zellcheming" in Garmisch-Partenkirchen. Das Papier 6, no. 15/16: 311-28 (August, 1952); Wochbl. Papierfabr. 80, no. 13: 487-9; no. 14: 523-6 (July 15, 31, 1952). [In German]

A report of the activities of the 1952 general meeting of the association is presented, including abstracts of the papers (and brief discussions in the first reference). E.S.

BAGASSE

CELLULOSE DEVELOPMENT CORPORATION LTD. India's new bleached bagasse pulp mill is first in Commonwealth. Paper Making and Paper Selling 71, no. 2: 6-9 (Summer, 1952); *cf.* B.I.P.C. 22: 560.

Details of the new pulp mill of Rohtas Industries Ltd., Dalmianagar, India are given. 7 illustrations, including two photomicrographs of bagasse and bamboo. E.S.

BARK

ANON. Kurth process extracts chemicals from fir bark. Chem. Eng. 59, no. 8: 244 (August, 1952).

M. W. Kellog Co. will explore the possibilities of extracting commercially valuable chemicals (wax, dehydroquercetin, and tannin) from Douglas-fir bark by the Kurth process. The option agreement granted by the state of Oregon covers an eight-month period of investigation and may be followed by an 18-month pilot-plant stage, and then an exclusive production contract for five years. E.S.

BEATING

BORRUSO, DOMENICO. The possibility for increasing the beating rate of cellulosic fibers. II. A study of beating in the presence of paper dyes with evaluation of the Schopper-Riegler degrees. Ind. carta (Milan) 6, no. 7: 77-83 (July, 1952). [In Italian] *cf.* B.I.P.C. 22: 728-9.

The action of direct dyes of the benzidine class (I) for accelerating the beating rate was found to be more or less pronounced, but always positive as compared with the results obtained with ordinary tap or distilled water. The evaluation of the beating degree was carried out according to the latest analytical data published on the subject; the data state that the degrees S.-R. are principally influenced by an increase in specific surface (mucilaginous fibrillation which, as a rule, does not adhere to the fibers) and only very little by an increase in specific volume (hydration), on which the mechanical properties of paper chiefly depend. Two series of experiments were therefore carried out: one on pulp beaten to a standard S.-R. degree and the other on repeatedly washed pulp with a S.-R. degree determined after all nonadhering mucilaginous matter had been removed. Although the pulp had an exceptionally low beating degree in the second case, it retained its physical and mechanical properties. This fact supports the theory that the development of the strength properties is attributable to hydration (connected with the formation of superficial gels) and not to an increase in specific surface. On the basis of these data and results, the effect of (I) may be considered to consist of a more plasticizing action than that exerted in the presence of water, which renders the solid cellulose structure, particularly the more accessible (amorphous) fraction, less resistant to the action of the beater. The phenomena of beating and the development of strength properties are the same in the presence of (I) as with water alone, the only difference being the time element. From the facts known about the diffusion, absorption, and arrangement of the direct dye molecules in the cellulosic fiber, the author attempts an explanation of the difference in reaction of these dyes and that exerted by (I), notably Congo red, Benzopurpurin 4B and 10B, Chicago blue 6B, and Direct blue 2B. 2 tables and 20 references. E.S.

CRAIG, F. A. Practical beating. Paper-Maker (London) 123: 24-5, 28, 31 (Mid-summer, 1952); World's Paper Trade Rev. 138, no. 6: 409-16, 421 (Aug. 7, 1952).

The author reviews the evolution of beating practice during the last 60 to 70 years in Great Britain, including a short discussion of the principal beaters and their tackle, refiners, beating control, and continuous beating systems. In mass production, continuous beating appears to be the logical approach; however, in Great Britain, paper production is still highly diversified, and the hollander type of beater and the batch system are not yet obsolete. In conclusion, the usual beating practice for newsprint, wallpaper, M.F. printings, book paper, writings, wrappings, M.G. papers, absorbent papers, and greaseproof papers are described. E.S.

BLEACHING—GROUNDWOOD

LEAF, R. L., JR. Little Rapids increases groundwood bleaching

capacity. Paper Ind. 34, no. 5: 596-9 (August, 1952); *cf.* B.I.P.C. 21: 4, 79.

The process and installations for bleaching groundwood market pulp by the BECCO cold-steep bleaching system are described. The commercial pilot plant (15 tons daily) has been in almost continuous operation for more than one year; additional equipment has recently been installed, bringing its capacity to 30 tons per day. The mechanical details of producing high-density pulp, mixing the pulp and bleach liquor, and handling the resulting mixture by a pneumatic system were developed through the co-operation of Buffalo Electro-Chemical Co., Jackson & Church Co., and mill personnel. 12 figures, including 1 flowsheet. E.S.

BOARD

VOGEL, R. E. Fiberboards and chipboards. Kunststoffe 42, no. 6: 165-8 (June, 1952). [In German]

The different processes for the manufacture of fiberboards and chipboards; the machinery employed; sizing, hardening, and impregnating agents; hardening by subsequent heat treatment; strength properties; production and consumption data for Sweden, Finland, and Germany; and future developments and trends are reviewed. 1 table, 3 figures, and 8 footnotes. E.S.

BOARD—CONVERSION

BOXBOARD CONTAINERS. Don't let summer's heat foul corrugated box operations. Boxboard Containers 70, no. 716: 46-8 (August, 1952).

Hot-weather board difficulties and suggestions for their elimination or reduction are discussed. The stock should be stored in a well-ventilated area with good air circulation; a hot, dry board is considered particularly desirable for all operations, and the application of heat must be checked carefully, particularly at the combining point. The viscosity of starch adhesives and printing inks must be watched closely and applications be reduced correspondingly. The operations at the printer-slotter and taping machines are also adversely affected by moist or wet board; this applies not only to corrugated-box operations but also to solid fiberboard which is vulnerable to the same hazards at the paster. E.S.

BOXBOARD CONTAINERS. Folding paper box finishing operations. Article 9—Gluing hot waxed and cold waxed cartons. Boxboard Containers 70, no. 716: 42-5 (August, 1952); *cf.* B.I.P.C. 22: 896.

The special problems presented by waxed cartons in gluing operations, dewaxing of the areas to which the glue will be applied, and feeding, stacking, and handling difficulties are discussed. 5 illustrations. E.S.

FARRAH, G. A. Quality board makes quality boxes. Fibre Containers 37, no. 7: 35-6, 38 (July, 1952).

The author discusses the requirements of linerboard and corrugating mediums which influence carton appearance, performance, and box-fabricating operations. The importance of uniformity, particularly of moisture content, is repeatedly stressed. E.S.

BOARD, BOX

WEIDNER, JOHN P. Manufacturing board for folding cartons. Tappi 35, no. 8: 20A, 22A; discussion: 22A, 24A (August, 1952)

The author outlines the characteristics of the principal grades of folding boxboard, including bleached manila, white patent coated, and clay-coated boards (machine and off-machine coated), as well as the requirements for the manufacture of folding cartons. E.S.

BOARD, INSULATING

LAURING, EDGAR A., ENZMANN, RALPH, and KIRK, WILBERT J. E. Invention improves new tileboard. Paper Trade J. 135, no. 6: 11 (Aug. 8, 1952).

A method for improving the manufacture of Acoustilite tileboard (an Insulite sound-deadening board with 484 holes bored into each tile) is described. According to the invention (for which patent application has been made), the dust remaining in the holes is efficiently removed by passing over slotted vacuum pipes, thereby improving the appearance of the board and keeping the slippery dust off the floor. 2 figures. E.S.

BOARD MILLS

ANON. Container's Los Angeles mill. Fibre Containers 37, no. 7: 28, 30 (July, 1952); *cf.* B.I.P.C. 22: 916.

A brief description is given of the new seven-vat cylinder machine built by Black-Clawson for the California Container Corp. Division at Los Angeles. It is designed for the manufacture of 80 tons of folding boxboard per day and is driven by a steam turbine. The stock preparation system includes Hydrapulpers and a Hydrafiner system with Duotrol control. 4 figures. E.S.

ANON. New hardboard mill in Oregon. Paper Mill News 75, no. 32: 11-15 (Aug. 9, 1952); *cf.* B.I.P.C. 22: 895-6.

An illustrated description is given of the new Douglas-fir hardboard plant of the Oregon Lumber Co. at Dee, Ore., where Allwood panels are made from the entire slabwood originating in the company's sawmills. 1 flowsheet and 11 illustrations. E.S.

PAPER MILL NEWS. New National Gypsum mill at Pryor. Paper Mill News 75, no. 35: 10-12, 14, 16, 18-20 (Aug. 30, 1952); *cf.* B.I.P.C. 22: 730.

A similar description as in the previous reference is given. 27 illustrations. E.S.

BOARD TESTING—PHYSICAL

JONES, EARLE, EDELMAN, SEYMOUR, and LONDON, ALBERT. Long-tube method for field determination of sound-absorption coefficients. J. Research Natl. Bur. Standards 49, no. 1: 17-20 (July, 1952).

A method has been developed that makes possible the measurement of the sound-absorption coefficient (I) of acoustic materials (II) that have been installed. The method uses a portable version of the familiar impedance tube, in which measurements of the standing sound-wave pattern are used to obtain (I) for normally incident sound. The (I) for randomly incident sound may be determined from the tube measurements by reference to an extensive table given in the paper. The tube is coupled to (II) without defacing its surface so that the test is nondestructive. It is useful for

acceptance testing, the determination of the effects of aging, staining, and redecoration of (11), and for quality-control purposes in the manufacture of (11). The results of laboratory measurements on a large number of acoustic tiles and plasters were compared with the results obtained with the standard reverberation-room techniques. Field measurements were made on acoustic plasters. Large variations in (1) were observed and ascribed to faulty application and painting procedures. Measurements were made at 512 cycles per second only. 2 tables, 4 figures, and 2 references. E.S.

BUSINESS CONDITIONS

HAAKE, ALFRED P. What is ahead for business? Tappi 35, no. 8: 121-6A (August, 1952).

The author cites the evils of false prosperity built on the quantity theory of money rather than the commodity theory and predicts a creeping internal disintegration of national strength unless a sound moral undergirding for economic and political life is re-established. L.C.

CARBOHYDRATES

MONTGOMERY, R., and SMITH, F. Chemistry of the carbohydrates. Ann. Rev. Biochem. 21: 79-108 (1952); *cf.* B.I.P.C. 22: 97.

The present review covers principally the period from 1949 to October, 1951, although earlier references are also mentioned; it deals with the determination of absolute configuration, fundamental reactions and syntheses, polysaccharides (cellulose, glycogen, starch, Schardinger dextrins, dextran, mannose-containing polysaccharides, polyfructosans, hemicelluloses, plant gums and mucilages, uronides, algae polysaccharides, bacterial polysaccharides, and mucopolysaccharides), and enzymic studies. 301 references. E.S.

CARBON

THE MORGAN CRUCIBLE COMPANY, LTD., *London, England.* Carbon and the paper maker; aid in manufacturing processes of paper, chemical and allied trades. World's Paper Trade Rev. 138, no. 5: 315-16, 318 (July 31, 1952).

The use and suitability of carbon as constructional material for lining digesters, tanks, ducts, and towers, for the manufacture of bearings, piston rings and piston-rod packings, seals for centrifugal pumps, and pipes, flanges, cocks, T-pieces, and other pipe fittings are described. Carbon exhibits an unusual combination of properties, such as chemical and abrasion resistance, thermal conductivity, availability in porous and impervious forms, and good machining and refractory properties. 5 figures. E.S.

CELLULOSE

NICKERSON, R. F. "The reaction of cellulose with formaldehyde." Textile Research J. 22, no. 8: 554-5 (August, 1952); *cf.* B.I.P.C. 22: 483.

The author raises two objections to the paper by Wagner and Pacsu concerning "acid catalysts as mild as boric acid." No other acids were tried and the generalization is not justified; in addition the authors failed to mention the unique behavior of boric acid in the presence of sugars. Evidence is presented to show that boric acid can form complexes with cellulose and develop greater than ordinary acidity. 3 tables and 3 references. E.S.

CELLULOSE—HEMICELLULOSE

JONES, J. K. N., and WISE, LOUIS E. The hemicelluloses present in aspen wood (*Populus tremuloides*). Part I. J. Chem. Soc.: 2750-6 (July, 1952).

Partial hydrolysis of extracted aspenwood (I) gave rise to a mixture, which by (fully described) fractionation yielded largely D-xylose and much smaller amounts of L-arabinose, D-galactose, L-rhamnose, and D-glucose, xylobiose, and xylotriose. An acid fraction, separated from these sugars by means of Amberlite resin 1R-4B, contained a variety of components of which one, 4-methyl-D-glucuronic acid, was fully identified. When treated with sodium metaperiodate at 2°C., the polysaccharides in (I) were only partially oxidized and, on hydrolysis, still yielded 14.3% xylose (II) and 2.8% glucose. Apparently the (II) units in (I) are protected (at least in part) against more extensive oxidation by the presence of acetyl groups. On the other hand, hemicelluloses, when once isolated from (I) and when similarly oxidized and hydrolyzed, behaved very differently. They yielded only 1.7% of xylose and no other simple sugars. These differences are discussed fully. Other acidic sugar components are being studied. L.E.W.

SAHA, P. K. Viscosity of sodium salt of polyuronide hemicellulose from jute. Nature 170, no. 4320: 281 (Aug. 16, 1952).

A hemicellulose (I) was isolated from jute holocellulose by 9.3% caustic soda and was purified as the sodium salt. The reduced viscosity (η_{sp}/C) of (I) (acting as a polyelectrolyte) increases with dilution. On the other hand, in the presence of sodium chloride, (I) behaves as a neutral polymer. 1 figure and 5 references. L.E.W.

SARKAR, P. B., MAZUMDAR, A. K., and PAL, K. B. The nature of the hemicelluloses of jute fiber. Part I. Textile Research J. 22, no. 8: 529-34 (August, 1952).

A polyuronide hemicellulose has been isolated from the chlorite holocellulose of jute fiber. It constitutes about 75% of the hemicelluloses of jute and appears to consist of one molecule of monomethylglucuronic acid linked with six molecules of anhydroxylose, which is the repeating unit. On hydrolysis, it gives methylaldobiuronic acid, which has been investigated as the barium salt; complete hydrolysis of this acid has not been possible. Results of the bromine oxidation of the barium salt of methylaldobiuronic acid indicate that the acid is at one end of the chain, and its hemiacetal group forms the glucosidic link with xylose. There is no free xylan in jute fiber. The only other sugar detected thus far in the alkali extract of jute holocellulose is galactose, which occurs only in small amounts. Methyluronic acid seems to be incapable of yielding furfural on distillation with 12% hydrochloric acid. This methyluronic acid-xylose complex is the principal, if not the only, acidic constituent of the fibers, which apparently is responsible for its natural affinity for basic dyes. 7 tables and 20 references. E.S.

CELLULOSE—OXYCELLULOSE

DAVIDSON, G. F. The preparation of acidic oxycelluloses by the action of alkaline hypobromite on cotton cellulose. J. Textile Inst. 43, no. 7: T291-8 (July, 1952).

The oxidation of cotton cellulose by alkaline hypobromite in the dark has been studied over a range of oxygen consumption up to 0.4 atom per glucose unit. It leads to a progressive loss of weight by the cellulose owing

to the formation of carbon dioxide and other soluble oxidation products; some of the latter are further oxidized in the solution. The variation of the copper number, fluidity in cuprammonium, and the carboxyl content of the resulting oxycelluloses with oxygen consumption has been determined. The oxidation is greatly accelerated by light. 3 tables, 5 figures, and 13 references. E.S.

CELLULOSE—SORPTION

HARRISON, W. Absorption of direct dyes by cellulose. Chemistry & Industry no. 31: 758-9 (Aug. 2, 1952); *cf.* B.I.P.C. 22: 817.

The author refutes Standing's remark that all modern theories of direct dyeing of cellulose evolved since 1933 are based on the assumption that the color ions of direct dyes are preferentially adsorbed by cellulose and presents evidence from his own work to show that, under certain conditions, the cations are preferentially adsorbed by cellulose. 2 references. E.S.

CELLULOSE ESTERS

MALM, CARL J., TANGHE, LEO J., LAIRD, BARBARA C., and SMITH, GLENN D. Re-esterification during the hydrolysis of cellulose acetate. J. Am. Chem. Soc. 74, no. 16: 4105-7 (Aug. 20, 1952).

Acetone-soluble cellulose acetate, when treated with 99.8% acetic acid containing a catalyst, is esterified, yielding products low in primary hydroxyl. In the presence of more than 2% of water, hydrolysis takes place, and the products contain increasing percentages of primary hydroxyl as the percentage of water is increased. Upon hydrolysis in other solvents where re-esterification is impossible, the products contain a high percentage of primary hydroxyl regardless of the amount of water present. In 95% butyric acid, considerable butyryl is introduced into cellulose acetate upon prolonged hydrolysis. Similarly, in 95% acetic acid, considerable acetyl is introduced into cellulose butyrate. A correlation was found between the optical rotation of the products and the percentage of primary hydroxyl present. 4 tables, 2 figures, and 4 references. E.S.

CELLULOSE ETHERS

BOUTTEMY, M. Contribution to the study of carboxymethylcellulose. II. Analysis and degree of substitution. Bull. soc. chim. France no. 3-4: 343-4 (March-April, 1952) [In French] *cf.* abstract below.

Carboxymethylcellulose and its salts can be determined by a dichromate oxidation such as that used by Bray and Andrews (*cf.* Ind. Eng. Chem. 15: 377-8 [1923]) for the determination of cellulose. This also gives the degree of substitution (D.S.), but is the more precise, the heavier the associated metal. For this reason the author recommends for the determination of the D.S. the conversion of other salts into the silver salt of carboxymethylcellulose. 4 tables, 1 diagram, and 4 references. K.W.,Jr.

F. Glykocellon in the paper industry. Wochbl. Papierfabr. 80, no. 14: 528 (July 31, 1952). [In German]

A brief review of the manifold applications of sodium carboxymethylcellulose (trade name Glykocellon) in the paper industry is presented (beater additives, adhesives, thickening agents, etc.). E.S.

JARRELL, J. G., and TROST, H. B. CMC—an aid to washability. Soap Sanit. Chemicals 28, no. 7: 40-3, 155; no. 8: 50-2, 163 (July, August, 1952); *cf.* B.I.P.C. 21: 838-9.

Laboratory data are presented which indicate that cotton sized with sodium carboxymethylcellulose (CMC) has a slight resistance to soiling and a marked ease of washing after soiling; these data were confirmed by semipractical and full-scale laundry trials. CMC is also shown to be a more effective stiffening agent than starch. 3 tables, 5 figures, and 7 references. E.S.

PACAULT, A., and BOUTTEMY, M. Contribution to the study of the analysis and substitution of carboxymethylcelluloses. Bull. soc. chim. France: 663-8 (1950). [In French]

The degree of substitution of purified carboxymethylcellulose is determined by calcination of a metal salt, usually sodium, and determination of the metal in the ash. A scheme is also given for the analysis of sodium carboxymethylcellulose and its impurities in the various commercial products. 3 tables, 3 figures, and 10 references. K.W.,Jr.

PACAULT, A., BOUTTEMY, M., and TANAEVSKY, O. Contribution to the study of carboxymethylcellulose. III. Lowering of the degree of substitution and chain length. Bull. soc. chim. France no. 3-4: 345-7 (March-April, 1952). [In French]

Sulfuric acid at room temperature de-etherifies carboxymethylcellulose. Apparently it simultaneously lowers the chain length, inasmuch as the viscosity drops. In view of the changing polyelectrolyte effect, the viscosity cannot be converted directly into the D.P. Moisture regain at different humidities was also determined for purified carboxymethylcellulose of different origins. 6 figures and 7 references. K.W.,Jr.

CHEMICAL LITERATURE

PERRY, J. W. The crisis in compiling and correlating chemical literature. Chemist 29, no. 7: 325-30 (July, 1952).

With reference to the human limitations of reading and absorbing the increasing amount of technical publications by the individual, the importance of subject indexes and machine techniques is emphasized; the latter are an economic necessity to conserve the time and energy of professionally active chemists. In addition, the writing of comprehensive review papers, monographs, and textbooks for providing specific information is urged; these have an important role to play in the future of chemical literature, not only for instructing students but for keeping chemists informed as to new trends and developments throughout their careers. E.S.

CHEMICAL TESTING—PAPER—PYRETHRIN

EDWARDS, FRED I., and CUETO, CIPRIANO. Estimation of pyrethrins on coated paper bags. Anal. Chem. 24, no. 8: 1357-9 (August, 1952).

The pyrethrins are removed by extraction with ethanol and determined colorimetrically. The reaction of pyrethrins and hydroxylamine forms a hydroxamic acid which gives a colored complex upon treatment with ferric chloride. Standards are prepared similarly, and the readings are taken on a Klett-Summerson colorimeter. The precision of the test is good, but it is

decreased to the extent that the ratio of pyrethrins I and II is unknown. 4 tables, 1 figure, and 2 references. B.L.B.

CHEMICAL TESTING—PULP—ALPHA CELLULOSE

ABADIE, F. A., and ELLEFSEN, Ø. Correspondence between the content of alpha cellulose and the content of the "A"-fraction, i.e., the fraction of nitrated cellulose which is precipitable in water when dissolved in acetone. Norsk Skogind. 6, no. 7: 192-5 (July, 1952). [In English; Norwegian and French summaries] *cf.* B.I.P.C. 20: 165-6.

Analytical data obtained from laboratory-cooked and industrial pulps and the residues obtained on hydrochloric acid hydrolysis of cellulose are presented to show the relationship between the α-cellulose content and the "A"-fraction of nitrated cellulose. The results have been checked by statistical methods and a very satisfactory agreement, both quantitatively and qualitatively, was found between the two fractions. The possibility of using the "A"-fraction for estimating the α-cellulose content and the original D.P. is mentioned. 3 tables, 2 figures, and 15 references. E.S.

CHLORINATION PROCESS

TABB, C. B., and KASSER, A. Regarding straw and bagasse pulps. Papeterie 74, no. 7: 414-15, 417 (July, 1952). [In French] *cf.* B.I.P.C. 22: 573.

A critique of certain statements in a previous article by Kasser is presented, with particular reference to the effect of the chlorination process on the resulting pulps. A reply by Kasser is appended. 3 tables. E.S.

CHLORINE

ANON. Acres of De Nora chlorine cells. . . Chem. Eng. 59, no. 8: 146-8 (August, 1952); *cf.* B.I.P.C. 21: 691.

A brief description of the caustic-chlorine plant at Muscle Shoals, Ala. is given; it was designed by Monsanto, which will also operate it for the government. It is the first large-scale installation of De Nora mercury cells in this country; 25-ton-per-day units have previously been installed by Monsanto and Marathon Paper Mills of Canada. 4 figures. E.S.

CHLORINE DIOXIDE

KESTING, E. The manufacture and properties of chlorine dioxide. Pulp Paper Mag. Can. 53, no. 8: 99-104 (July, 1952); *cf.* B.I.P.C. 22: 820.

This is essentially a translation of the German article. 6 figures. E.S.

CHROMATOGRAPHY

BARTON, G. M., EVANS, R. S., and GARDNER, J. A. F. Paper chromatography of phenolic substances. Nature 170, no. 4319: 249-50 (Aug. 9, 1952).

Phenols are separated on Whatman No. 1 paper, with water saturated with carbon dioxide (pH 4.2) as a developing solvent; the time of travel of the solvent front at 22°C. is 38 cm. in four hours. When the dried paper is sprayed with a mixture of equal volumes of 1% ferric chloride and 1%

potassium ferricyanide, deep blue spots similar to Turnbull's blue are obtained. The application of this technique to the phenols in the heartwood extracts from mountain hemlock (*Tsuga mertensiana*), western hemlock (*Tsuga heterophylla*), western red-cedar (*Thuja plicata*), and Douglas-fir (*Pseudotsuga taxifolia*) is described briefly. 1 table, 1 figure, and 7 references. J.W.G.

COLOR

HUTCHINS, M. C., STEARNS, E. I., and SUNDSTROM, F. O. Dyeing paper white. Tappi 35, no. 8: 342-50 (August, 1952).

The first part of this paper deals with the methods by which the whiteness of paper can be improved, including the chemical bleaching of the pulp, the addition of a white pigment, the addition of a blue dye, and the addition of a fluorescent dye. A comparison of the different methods and the theoretical evaluation of whiteness are considered. The second part of the paper is concerned with the various methods for the addition of fluorescent dyes. The various effects were studied and recommendations are given for the most effective usage. 3 tables, 13 figures, and 12 references. E.S.

COOKING PROCESS

JAYME, GEORG, and WÖRNER, GÜNTHER. Pulping sprucewood with liquors having an increased reduction potential. Holz Roh- u. Werkstoff 10, no. 6: 244-9 (June, 1952). [In German] *cf.* B.I.P.C. 22: 659-60.

By using sodium hydrosulfite (sodium dithionite) (I) to increase the reduction potentials of alkaline liquor, the authors obtained marked improvements in the entire pulping operation. (I) could be employed very effectively in both soda and kraft cooks, using 0.5 to 6.25 g. (I) per 100 cc. of kraft liquor. The following effects were noted when (I) was used in contrast to the usual soda or kraft cooking conditions: (1) pulp yields increased; (2) the D.P.'s of the pulps were higher; (3) breaking length, folding endurance, and burst improved markedly, as did the quality number; (4) spent liquors were so much lighter in color that they could no longer be designated "black liquors";. (5) residual lignin (which often ranged from 5-6%) was highly colored and could be removed more readily than from commercial kraft pulps; and (6) brightness both before and after bleaching was higher than in the case of commercial pulps. Kraft cooks to which (I) is added furnish the possibility of producing much easier bleaching pulps. The possible action of (I) is discussed at some length. Evidently oxidation of lignin is prevented (and/or lignin may be reduced) and the entry of sulfur into the lignin molecule is either prevented or diminished. Full tabulated, comparative data are given for pulps prepared both with and without (I), and some of the effects are expressed graphically. 8 tables, 3 figures, and 11 footnotes. L.E.W.

CORROSION

GOLDEN, LEX B., LANE, I. ROY, JR., and ACHERMAN, WALTER L. Corrosion resistance of titanium, zirconium, and stainless steel. Ind. Eng. Chem. 44, no. 8: 1930-9 (August, 1952).

Corrosion rates for titanium (I), zirconium (II), and 20-29 chromium nickel-type stainless steel (III) were determined in (*a*) various concentrations of sulfuric, hydrochloric, nitric, phosphoric, and mixed acids and (*b*) in various concentrations of ferric, cupric, mercuric, stannic, nickel, manganous sodium, ammonium, calcium, magnesium, barium, zinc, and aluminum

chloride solutions. The results showed that (I), (II), and (III) possess excellent resistance to all concentrations of nitric acid, whereas in mixed acid solutions, (I) and (III) have better corrosion resistance than (II). Of the three materials, only (II) is fully resistant to corrosion in hydrochloric acid solutions. (I) is fully resistant in an atmosphere of water-saturated chlorine, whereas (II) and (III) are severely attacked. Heavy metal chloride solutions have negligible effect on (I), whereas (III) is badly pitted and perforated. (II) is embrittled by ferric and cupric chloride solutions, but is unaffected by mercuric chloride. (I) and (II) are fully resistant to corrosion by solutions of alkali and alkaline earth chlorides, whereas (III) is susceptible to pitting in these media. (I) is entirely unaffected by hypochlorite solutions, (II) is slightly embrittled, and (III) is badly pitted. Neither (I) nor (II) is completely resistant to all mineral acids and inorganic chlorides under all conditions, but each has its specific corrosion-resistant properties. 10 tables, 12 figures, and 22 references. E.S.

INDUSTRIAL AND ENGINEERING CHEMISTRY. Corrosion by water. Ind. Eng. Chem. 44, no. 8: 1736-95 (August, 1952).

The symposium consists of the following individual papers listed by authors and titles: Uhlig, Herbert H. Corrosion control in water systems—18 references, p. 1736-40; Sussman, Sidney. Cooling water problems in the New York metropolitan area—7 tables, 4 figures, and 4 references, p. 1740-4; Copson, H. R. Effects of velocity on corrosion by water—3 tables, 9 figures, and 56 references, p. 1745-52; Hackerman, Norman. Effect of temperature on corrosion of metals by water—1 figure and 21 references, p. 1752-5; Breston, J. N. Corrosion control with organic inhibitors—5 figures and 57 references, p. 1755-61; Ulmer, R. C., and Wood, J. W. Inhibitors for eliminating corrosion in steam and condensate lines—4 tables, 5 figures, and 22 references, p. 1761-5; Lehrman, Leo, and Shuldener, Henry L. Action of sodium silicate as a corrosion inhibitor in water piping—5 tables, 5 figures, and 24 references, p. 1765-9; Kahler, H. Lewis, and Gaughan, Philip J. Protection of metals against pitting, tuberculation, and general corrosion; combined phosphate-chromate treatment—6 tables, 3 figures, and 4 references, p. 1770-4; Hatch, G. B. Protective film formation with phosphate glasses—3 tables, 6 figures, and 13 references, p. 1775-80; Hatch, G. B. Inhibition of galvanic attack of steel with phosphate glasses—3 tables, 9 figures, and 5 references, p. 1780-6; Sudrabin, Leon P., and Marks, Henry C. Cathodic protection of steel in contact with water—4 tables, 6 figures, and 30 references, p. 1786-91; and Aziz, P. M., and Godard, Hugh P. Pitting corrosion characteristics of aluminum—6 tables, 6 figures, and 3 references, p. 1791-5. E.S.

DE-INKING

KALAMAZOO RIVER IMPROVEMENT COMPANY. Discover uses for sludge from deinking mills. Paper Trade J. 135, no. 6: 12 (Aug. 8, 1952); Chem. Eng. News 30, no. 34: 3543 (Aug. 25, 1952).

The large quantity of concentrated sludge removed from the mill effluent of deinking mills (clay mixed with small portions of carbon black, calcium carbonate, and cellulose-fiber debris) may possibly be used by paper mills as a filling or coating pigment (after incineration), in the building trade, and for the manufacture of asphalt tile. E.S.

ELECTRONIC DIFFRACTION

WILLIAMS, A. E. Electron diffraction in paper examination. World's Paper Trade Rev. 138, no. 6: 421-3 (Aug. 7, 1952).

The examination of paper by electron diffraction methods is a relatively new technique which permits the investigation of paper surfaces to a degree which has hitherto been impossible. The outstanding difference between x-ray and diffraction techniques is the fact that even the fastest electrons have only a small penetrating power, thus making the process particularly suitable for the examination of surface phenomena on both massive and thin sections; with an average sheet of paper, it is possible to investigate both the surface and the interior of the sheet. An electron diffraction camera consists essentially of a device for producing a fine beam of electrons moving at a controlled velocity (the accelerating voltage during exposure must have a high degree of stability or a broadening of the diffraction will result); an arrangement for holding the specimen in any desired position relative to the beam of electrons; and visual and photographic means for observing and recording the angular distribution of the diffracted electrons. The equipment operates under a very high vacuum. There are three principal methods of electron diffraction: transmission for exceedingly thin films of the specimen; reflection (in which the electron beam falls upon the specimen at grazing incidence) for surface layers of massive materials or very thin films; and a third procedure for the examination of gases and vapors (very little used in the paper industry). Different applications are described, including the surface examination of calendered papers, the structure and depth of coatings or metal layers, the structure and changes of fibers, different finishes, and the estimation of the degree of gloss. An example of an interpretation of a typical electron diffraction pattern is given. 3 figures. E.S.

ENGINEERING

SRIKANTAN, D. L. Some engineering fundamentals of quality. Indian Pulp and Paper 6, no. 11: 465, 470 (May, 1952).

Lubrication, slime prevention, and corrosion prevention through electroplating of exposed machinery sections are discussed as a means for improving paper quality. E.S.

ENZYMES

WHITAKER, D. R. An effect of proteins and proteoses on the cellulase of *Myrothecium verrucaria*. Science 116, no. 3004: 90-2 (July 25, 1952).

During work on the purification of cellulase of *Myrothecium verrucaria*, the author observed a marked stimulation of cellulase activity by the addition of proteins and proteoses. Cellulase activity was increased by the addition of Difco Dubos medium serum, crystalline bovine plasma albumin (Armour), crystalline β-lactoglobulin (Armour), crystalline pepsin (Armour), crystallin lysozyme (Armour), gelatin (Difco), and the nondialyzable portion of Difco proteose-peptone. Under the conditions of the tests the proteins stimulated enzyme activity toward insoluble cellulosic substrates only; they had no effect on enzyme activity toward cellobiose or soluble carboxymethylcellulose. The author found that for a given level of added protein the extent of cellulase stimulation depended upon at least four factors: (1) it varied with pH; (2) it varied with temperature; (3) it increased with an increase in substrate concentration; and (4) stimulation decreased with increasing enzyme concentration. Evidence is also presented which indicates that the added protein is partially adsorbed on the substrate. 2 tables, 2 figures, and 4 references. B.F.S.

FIBER—IDENTIFICATION

HEYN, A. N. J. Observations of the birefringence and refractive

index of synthetic fibers with special reference to their identification. Textile Research J. 22, no. 8: 513-22 (August, 1952).

Birefringence and refractive indices of synthetic fibers have been measured by the polarization color and immersion methods. These properties proved to be much more consistent and characteristic for synthetic fibers than for natural fibers and rayons, to which previous studies had principally been confined. These features can therefore be used in the identification of synthetic fibers. A simple polarizing device for making these measurements using an ordinary microscope is described. 3 tables, 2 figures, and 26 references. E.S.

FILES AND FILING

HAWKINS, G. A., and BOELTER, L. M. K. A suggested filing system for keeping abreast of technical literature and general information of interest to the engineer. Mech. Eng. 74, no. 8: 647-8 (August, 1952).

A procedure for establishing a permanent personal file of technical reference material is described; all items are filed according to the year of publication in filing cabinets or boxes which may be stored in the basement or attic. The reason for arranging this "base file" according to date is the fact that in the majority of instances technical information is cumulative and, usually, the latest information recapitulates or supersedes the earlier data. For each item in the base file, three identical cards (3 by 5 inches) are prepared and arranged under three divisions: year, author, and subject; these may be kept in a desk drawer or cabinet. The use of a different color for the cards in each of these three files is recommended. The cards filed according to date duplicate the base file; the author and subject divisions are supplementary. To maintain a general filing system of this type effectively, it is necessary to keep it up to date; one evening per month was usually found sufficient. 2 figures and 2 references. E.S.

FLOOR COVERING

BAKELITE COMPANY. Something new underfoot. Bakelite Rev. 24, no. 2: 12-13 (July, 1952).

A brief reference is made to the new plastic laminated-plywood floor tile with an exceedingly hard, scuff-resistant surface which was recently laid experimentally on the lobby floor of the U. S. Forest Products Laboratory at Madison, Wis. The plywood was furnished by the Douglas Fir Plywood Association, and the decorated laminated sheet for surfacing was produced by the Consolidated Water Power and Paper Co. from Bakelite phenolic-impregnated paper sheets. At the Laboratory, the laminate was bonded to the top and bottom of the plywood panel, cut into 10.5-inch square tiles, and fitted with tongue and groove joints. More than 1500 square feet of tile were laid in tile cement in an attractive checkerboard pattern of light brown and Forest Service green on a concrete subfloor. The tiles were set in place and tapped firmly to set the joints. The new floor is expected to require very little maintenance. 4 illustrations. E.S.

FOLDING BOXES

AYERS, L. R. Testing procedures for folding cartons. Tappi 35, no. 8: 36A, 38A, 40A; discussion: 40A, 42A, (August, 1952).

The author deals with certain basic considerations for testing procedures, with particular reference to folding cartons, including the reliability of the results obtained, the reproducibility of readings, the sampling procedure,

the personal element, rigid testing procedures, variations between presumably identical instruments, and the nature of changes in the sample brought about by aging, changes in moisture content, etc. The ideal approach to the solution of many problems involved in testing procedures is through the use of statistical methods; their application to the board and carton field is just beginning and will undoubtedly increase in the future and play an important part in improving test procedures and in the interpretation of their results. E.S.

GARDNER, HOWARD S. Development of folding cartons. Tappi 35, no. 8: 42A, 44A, 46A, 48A; discussion: 48A (August, 1952).

The author outlines the different steps and some of the problems involved in a development program of folding cartons. As an example, an experience with milk cartons is described. E.S.

IRWIN. R. A. Future of folding cartons. Fibre Containers 37, no. 7: 96, 98, 100, 102 (July, 1952); Tappi 35, no. 8: 48A, 50A, 52A, 54A, 56A (August, 1952).

The author reviews recent progress in the packaging field, some foreign developments, and the possibilities of the future for the folding-carton industry. Management must spend more time on planning for the future, selling techniques must be improved, and more thought must be given to human relations. In the author's opinion there is plenty of room for integrated and independent operations, and no reason for any pessimistic attitude by nonintegrated converters exists, because they can compete successfully in the field of short and medium-sized runs. E.S.

THE MEYERCORD COMPANY. The problem product. Modern Packaging 25, no. 12: 95, 183 (August, 1952).

Plastic veneer, formerly sold in unwrapped sheets, is now rolled and enclosed in a folding box which eliminates inconvenience and damage in storage and handling and provides brand identification and sales appeal. The packages are displayed and stored in a chest of drawers covered with veneer samples. 2 illustrations. L.C.

ROMNEY, W. L. Folding cartons from the consumer's viewpoint. Tappi 35, no. 8: 32A, 34A, 36A; discussion: 36A (August, 1952).

The author discusses carton performance from the standpoint of appearance, machine handling, and product protection, and suggests a technical service which will anticipate the user's future requirements in the form of a research and development setup where actual pilot operations can be carried out. E.S.

RUF, ERMIN P. How to meet today's business problems. Fibre Containers 37, no. 7: 87-8 (July, 1952).

The author blames the slump in demand for folding boxes on government restrictions on, and the high prices of, consumer goods for which the boxes had been used. He gives 12 rules for cost reduction and recommends a leveling of production until demand increases naturally. L.C.

SOOY, WALTER. Meeting the customers requirements for folding cartons. Tappi 35, no. 8: 28A, 30A; discussion: 30A, 32A (August, 1952); *cf.* B.I.P.C. 21: 804-5.

The author discusses the need for proper specifications in the manufacture

of folding boxes and the use of a good statistical quality control system for checking every step in the manufacturing process to meet the requirements of the customer. 2 tables and 3 figures. E.S.

STOWITTS, F. W. Folding carton manufacturing problems. Tappi 35, no. 8: 24A, 26A; discussion: 26A, 28A (August, 1952).

The problems connected with folding-carton manufacture are discussed under the headings: carton design, electros, boxboard, inks, printing presses, die-making and -cutting process, gluing, packing, and loading. E.S.

FORCED CIRCULATION

MCEWEN, JOHN M. Acid pulping—strainer and circulation survey. Tappi 35, no. 8: 361-4 (August, 1952).

The TAPPI Acid Pulping Committee sent a questionnaire on strainers and forced circulation to 61 mills. Such a survey has certain shortcomings but there seemed to be rather general agreement on some points. The mills which have forced circulation believed it gave them better quality and a more uniform pulp. The mills reporting the best circulation had normal or low free sulfur dioxide in their acid, split circulation, and hydroheaters or indirect heaters. There was some question as to the effect of the location of the strainers, the area of strainers, and whether removing side relief to within a foot or so of the strainers would cause poorer circulation. The ability to circulate was seemingly not affected by the amount of chip packing, normal strainer cleaning variations, the final permanganate number, the maximum temperature, or the length of the cooking cycle. 11 tables and 1 reference. E.S.

FUNGI

BASU, S. N., and GHOSE, S. N. Fungal decomposition of jute fibre and cellulose. Part 3. The decomposition of cellulose as influenced by its physical state and by associated substances. J. Textile Inst. 43, no. 6: T278-89 (July, 1952); *cf.* B.I.P.C. 19: 319-20.

Experiments with a large number of jute-decomposing fungi, using jute and different forms of cellulose, have shown that the lignin in jute has a strong protective action on the remainder of the fiber. Lignin-free jute is much more susceptible than cotton or jute α-cellulose, because of the presence of hemicelluloses. Not only are hemicelluloses themselves more easily decomposed than cellulose, but their presence stimulates the decomposition of the latter. Micronutrients in the water-soluble matter in jute also stimulate cellulose decomposition by some fungi. Thus, there are a large number of fungi between those that decompose pure cellulose and those that do not decompose cellulose under any conditions. Decomposition of cellulose is favored by such physical factors as increased surface and a low crystalline-amorphous ratio. Decrease in chain length had no effect within the limits of these experiments. On the contrary, hydrocellulose was found to be more resistant, which may be due to increased crystallinity or removal of sugarlike substances as envisaged by Pacsu. The differences in availability between different forms of cellulose suggest the existence of other yet unknown aspects of the physical and chemical structure of cellulose which have a bearing on its biological decomposition. The formation of the cellulose-splitting enzyme is stimulated by the presence of hemicelluloses, and the enzyme may be to some extent specific for the fungus. There was agreement with the work of other investigators that, whereas some species have wide specificity between strains, cellulose-decomposing ability is generally a uniform property within the species. 7 tables and 24 references. E.S.

GADD, G. O. Observations on the development of fungi in pulp and a method to estimate the damages caused by them. Paper and Timber (Finland) 34, no. 4a: 129-36 (Special issue, 1952). [In English]

The author attempted to provide a numerical evaluation of the damage caused by fungi during storage of wet chemical (I) and mechanical pulps (II). A staining and microscopic counting method used in the textile industry was adapted to the determination of the percentage of fiber damage by fungi in (I). Laboratory-prepared, miniature bales were inoculated with mold spores and, after storage, checked for the amount of damaged fibers and the deterioration in the strength properties of the infected pulps. The influence of the mold stains on the color of the pulp was also investigated. Another series of studies was carried out on the properties of (II). Non-attacked (II) and rot-stained areas were compared for their strength properties and color. It was found that an estimate of the amount of damage which had occurred could be made. Since the mold fungi appear in spots and principally on the surface of the pulp sheets, the percentage of fibers damaged by fungi is usually low. The average samples taken from a shipment of chemical pulp do not, as a rule, show any measurable decrease in strength resulting from molds. It was also found that the pulp can be strongly discolored without noticeable changes in the color of the paper made from the infected pulp. The magnitude of damage to (II) was dependent upon the species of the fungus and the age of the stains, as far as strength properties are concerned (*Polyphorus abietinus* and *Lenzites sepiaria* were studied), whereas the deterioration in the color of paper made from the infected (II) was proportional to the extent of infection (total area of rot stains compared with that of entire pulp shipment). When rot fungi grow on (I) or (II), they form neither spore-carrying fruit bodies nor colored mycelia. When lignin is attacked by the fungus, colored products are formed which spread throughout the pulp. The above results indicate that it is not possible to evaluate the damage suffered by infected pulp by the appearance of the shipment or the inspection of a few individual sheets; an exact determination based on a properly performed sampling technique is necessary for a fair judgment of the pulp quality. In conclusion, the processes of fungal growth and attack of the fibers are considered from a chemical point of view. 8 tables, 12 figures, and 11 references. E.S.

GRASSES

BHAT, R. V., and SINGH, MAN MOHAN. Indigenous cellulosic raw materials for the production of pulp, paper and board. Part V. Pulps for strawboards from ulla grass (*Themeda arundinacea*) and panni grass (*Vetiveria zizanioides*). Indian Forester 78, no. 1: 2-8 (1952).

Because of the shortage of wheat and rice straw for the manufacture of board, the capacity of Indian strawboard mills is not fully utilized. Laboratory experiments at Dehra Dun have shown that pulps of suitable color and strength properties could be prepared from ulla grass (I) and panni grass (II) (which have no other special use) by cooking with lime. (I) requires crushing before digestion. Under otherwise identical conditions, (II) gives a higher pulp yield than (I). Pulps with good strength properties are obtained from (I) by cooking with either 15% of lime at 140°C. or 10% of lime at 162°; in the case of (II), a higher temperature (153-162°) is required, irrespective of lime percentage. A good pulp is obtained with 10% of lime at 162°. (II) can be beaten to the required freeness in a shorter time

than (I). These laboratory results must be confirmed by mill-scale trials of pulping and boardmaking. 3 tables and 8 references. E.S.

GROUNDWOOD PULP

SPERRE, ARNE. Recent development in the manufacture of groundwood pulp. Norsk Skogind. 6, no. 7: 196-202, 205, 207 (July, 1952). [In Norwegian; English summary]

The author reviews trends in new machinery (ring grinders, coarse screens and mills for the comminution of the rejects, fine screens, refiners, thickeners, and trucks for handling bales) and manufacturing techniques. The complete separation of the screenings from the mechanical pulp and their utilization as raw material in the wallboard industry are recommended. 14 figures. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Empire State Section,* and Canadian Pulp and Paper Association. *Technical Section. Niagara Branch.* Mechanical pulp panel. Tappi 35, no. 8: 105-10A (August, 1952).

The following brief papers (listed by authors and titles) were included in the discussion of the joint meeting; Jones, Morris R. Recent improvements in the production of groundwood for newsprint manufacture, p. 105-6A; Auchter, R. J. Trends in the use of groundwood for the production of magazine, book, catalog, directory, and allied papers, p. 106-7A; Cole, Grant G. Fields for groundwood in the manufacture of napkins, tissue, and toweling, p. 107-8A; and Premo, Richard A. Peroxide bleaching of groundwood, p. 108-9A. E.S.

HEATING (INFRARED)

STABILAG COMPANY LTD., *London, England.* Stabilag infra-red heating jacket. World's Paper Trade Rev. 138, no. 3: 156, 158 (July 17, 1952); *cf.* B.I.P.C. 21: 775.

The incorporation of a small Stabilag heating jacket in a pilot research plant in South Africa and the resulting advantages are described. 1 illustration. E.S.

HISTORY

ANON. Edward Towgood & Sons, Ltd. Paper Making and Paper Selling 71, no. 2: 22, 24 (Summer, 1952).

Sawston Paper Mill, although now owned by Spicers Ltd., continues to run under its previous name, Edward Towgood & Sons, Ltd. It is one of the oldest mills in England, and the only one now in existence in East Anglia. Positive records show that paper was manufactured at Sawston in 1664, although probably it started at a much earlier date. The history of the mill is outlined; during recent years it has been reconstructed and modernized. The output of the two paper machines is approximately 40 tons of high-grade fine papers per week. E.S.

EDWARDS, NINA L. Alliance's Merritton mills stem from historic "Old Lincoln" founded by churchmen and seafarers. Pulp Paper Mag. Can. 53, no. 8: 78-80 (July, 1952).

A brief history is presented of the founders of the mills which now comprise the Alliance Paper Mills Limited of Merritton, Ont. The progress of the mills from 1878 to the present is outlined. 3 illustrations and 8 references. E.S.

HYDRAULICS

BRYCE, J. B. The use of models in the design of log chutes at power dams. Pulp and Paper Manual of Canada 20: 45-7, 49, 51, 53-5, 59 (1952).

Although existing log chutes, particularly high-velocity chutes, involved a number of deficiencies, no proper basis for developing improved designs existed. Since a number of power developments requiring log chutes are to be built in Canada, the author was commissioned to study the performance of existing chutes for developing design principles which could be applied to new chutes. Many chutes in action were observed and much valuable information was obtained. From an analysis of their performance, certain theories were formulated with regard to the optimum design of the various elements involved. However, it was considered necessary to verify these theories before incorporating them into the new designs, and hydraulic model tests were considered to be the only practicable method. The role of such models, the results obtained with them, and situations where model tests are advisable are described in detail. 14 figures. E.S.

H-ION CONCENTRATION

THOMSON, A. G. Measurement of pH value. World's Paper Trade Rev. 138, no. 3: 206, 208 (July 17, 1952).

Different types of electrometric pH meters manufactured by the Cambridge Instrument Co. Ltd. are described, with particular reference to their suitability for the continuous recording of the H-ion concentration of effluents. 3 figures. E.S.

INORGANIC PAPER

CALLINAN, THOMAS D., and LUCAS, ROBERT T. Manufacture and properties of paper made from ceramic fibers. Paper Trade J. 135, no. 8: 24, 26, 28 (Aug. 22, 1952); *cf.* B.I.P.C. 22: 910.

Experiments with "Fiberfrax" (an aluminum silicate fiber developed by the Carborundum Co.) for the manufacture of an inorganic paper for electrical insulating purposes are described. The resulting material had excellent electrical, but low mechanical properties. By the use of a synthetic resin as a beater additive or a filler, such as bentonite, the strength properties could be markedly improved. The mechanical and electrical properties could be further increased by dipping the sheets into a common laminating or saturating varnish. 12 tables and 2 figures. E.S.

INSECTS AND VERMIN

MCNEEL, WAKELIN, JR., SHENEFELT, R. D., and PASCOE, TRUMAN A. Insects in jackpine pulpwood. Pulp & Paper 26, no. 9: 86, 88, 90 (August, 1952).

Wisconsin paper companies are faced with losses in the pulpwood-storage yards as a result of insect activity, particularly of "foreign" species, which may be brought in on pulpwood from outside the state. The present studies were initiated to determine means of preventing insect losses to pulpwood and to discover the influence of insects on adjacent trees, forests, and plantations. A program was set up to evaluate the losses caused by actual feeding of the insects, the introduction of fungi by insects, and the effect of treatment on the deterioration of wood during storage. Wood was cut during different seasons of the year during the periods when insects might

attack it. Field tests, as well as laboratory tests, showed that benzene hexachloride (I) was superior to the other insecticides tried. Since spraying in the yard was found to be impractical (spraying is almost useless once the insects have entered the wood), tests were conducted in the cutting area, and the chemical was applied 48 hours after cutting. Some of the conclusions thus far reached are: (I) gives good control of bark beetles and borers for at least a year. Blue stain and decay are definitely associated with insects and, consequently, fungal development is retarded by insect control. Fall-cut wood is attacked severely by bark beetles the following spring, which reduces the competition from the more destructive borers. Spring-cut wood is less attractive to both bark-beetles and borers than summer-cut wood and, consequently, less liable to attack by fungi. In the majority of cases, treated wood gives higher pulp yields than untreated wood, so that the cost of treatment will generally be offset by higher yield and better pulp quality. 10 figures. E.S.

INSTRUMENTATION

SEARS, GEORGE R., WINK, WILLMER A., and VAN DEN AKKER, J. A. Instrumentation studies. LXXIII (incorrectly listed as LXXXIII). A summary of instrumentation reports including the technique of evaluating instruments. Tappi 35, no. 8: 156-92A (August, 1952); *cf.* B.I.P.C. 22: 935.

The report is divided into two sections: the first section presents a brief description of the general method used in evaluating an instrument or a test method; the second is a nontechnical summary of the 76 reports which have been presented to the American Paper and Pulp Association as a result of the instrumentation program sponsored by them. These reports deal with the instruments or methods for measuring 27 properties of paper grouped into the following five divisions: optical properties (color, gloss, light transmission, opacity, and reflectance), physicochemical properties (liquid permeability, moisture content, sizing, and water-vapor permeability), strength properties (bending strength, compressibility, folding endurance, hardness, puncture, softness, stiffness, stretch, initial and continued tearing strength, and tensile strength), structural properties (air permeability, caliper, and formation), and surface properties (erasability, fuzz, smoothness, and surface-bonding strength). 41 figures and 80 references. E.S.

INVENTORIES

BARR, W. F. Stock taking with dictaphone. Pulp Paper Mag. Can. 53, no. 8: 108-10 (July, 1952).

The Kruger Paper Company Limited saved 600 man-hours biennially in stock taking by replacing the call-and-write system with a caller and portable dictaphone; errors were less than 0.5%. The inventory procedure is described. 6 illustrations. L.C.

LIBRARIES

"ALARIC." The young paper maker's bookshelf. Paper-Maker (London) 123, no. 6: 474-5 (June, 1952); 124, no. 1: 28 (July, 1952).

Advice on the selection of a personal library for a young papermaker is given, including a list of books published on papermaking during the past 50 years in the English language. A number of these are out of print. E.S.

LIGNIN

MÜLLER, OLAV, and DOBBERSTEIN, HEINZ. Chemistry of beechwood. V. A study of the hydrolysis of beechwood by a continuous measurement of the conductivity. Makromol. Chem. 8, no. 2: 156-77 (July, 1952); *cf.* B.I.P.C. 19: 552.

In the hydrolysis of polysaccharides with 72% sulfuric acid, water is added causing the formation of simple sugars. In the hydrolysis of cellulose to glucose, 100 g. of cellulose consume 11.1 g. of water to form 111.1 g. of glucose. The removal of water causes a change in the concentration of the sulfuric acid. This change is measured continuously by electrometric determination of the conductivity in a specially designed apparatus. After standardizing the appparatus with polysaccharides of known structure, beechwood—before and after treatment with a dilute alkali and acid—and holocellulose from beech were subjected to a hydrolysis, and the change in the concentration was determined. From the curves obtained, it was found that protolignin splits off and takes up water in a ratio of 3:1. The removal of water takes place under conditions such as those applied in the prehydrolysis of wood. The total amount of water split off from the lignin by condensation amounts to 2.9-3.1%. The lignin content of beechwood is therefore actually about 3% higher than that found in the lignin determination, and this amount must be taken into consideration when a total wood analysis is carried out. It has further been found that a part of the protolignin is stable toward chlorine dioxide. This lignin fraction contains the groups which split off water, whereas the addition of water takes place at the aromatic component of the lignin. 11 tables, 7 figures, and 19 references. F.E.B.

NORD, F. F., and STEVENS, GEORGE DE. Studies on lignin and lignification. Trans. N.Y. Acad. Sci. 14: 97-102 (December, 1951).

The authors discuss in a general way a theory of the formation of lignin based upon the results of their recent work on enzymatically liberated lignin. 4 tables and 40 references. F.E.B.

LIME AND LIMESTONE

HOLLEFRIEND, N. H. Two-diameter rotary lime kiln. Pulp and Paper Manual of Canada 20: 29, 31, 33, 35 (1952).

The advantages of the two-diameter kiln with a small-diameter feed end and an enlarged diameter burning zone are described. Details of the construction of a rotary kiln are given, including the shell, riding rings, carrying and thrust mechanism, drive, fittings, and chain system. 1 table and 5 figures. E.S.

LUBRICATION AND LUBRICANTS

ANON. Alemite-Oil-Mist for lubrication. Paper Mill News 75, no. 34: 68 (Aug. 23, 1952).

The efficiencies and economies resulting from this type of lubrication applied to papermaking machinery are outlined briefly. 2 illustrations. E.S.

LANGWORTHY, M. L., and WEETMAN, B. Serviceability of paper mill lubricants. Paper Mill News 75, no. 34: 70-1, 74, 76, 78 (Aug. 23, 1952).

The selection of proper lubricants for use on the wet and dry ends of

paper machines is discussed. Stress is laid on the fact that the increased temperatures existent in the drier sections today dictate the replacement of straight mineral oils with additive-type oils for economic bearing lubrication. Data are presented which show that increased temperatures have a detrimental effect upon the Falex transition point and extreme pressure and wear characteristics of various types of oils used in this service. The use of an antioxidant, dispersant, and detergent-type oil will minimize the adverse effects of high temperatures. By its use, shutdown periods for the cleaning of deposits and the formation of rust and corrosion on surfaces in contact with the lubricant are avoided. Data are presented to show that the surface finish of bearings influences the extreme pressure characteristics of oils and their degradation resulting from increased temperatures. 4 tables, 4 figures, and 1 reference. E.S.

SIPPOLA, A. I. Pulp and paper mill lubricants specifications. Tappi 35, no. 8: 150-3A (August, 1952).

The author emphasizes the need for the correct understanding and interpretation of the recognized tests for lubricating oils and greases and their evaluation in terms of expected performance characteristics. The success of lubricants will depend to a great extent on the procedures of application used; a correct lubricant can fail to perform if all other interconnected phases of application are not correctly exercised. To assure correct procedures, lubrication service and engineering counsel are available as part of the purchase of branded lubricants; purchasers should learn to avail themselves of these services. 1 reference. E.S.

MACHINERY

BAUER, LEROY J. Making the equipment installation. Paper Mill News 75, no. 31: 8, 10 (Aug. 2, 1952).

The author discusses the need for careful planning to eliminate oversights in installations which may later impair efficient production and operations. Examples of such pitfalls are given. E.S.

MACHINERY—BEATERS

AELDERT, A. The "Aeldert" combination hollander. Das Papier 6, no. 15/16: 331 (August, 1952). [In German]

A new hollander construction involving two beater rolls in one tub is described. 2 diagrams. E.S.

MACHINERY—BELTING

J. E. RHOADS & SONS. Maintenance of leather belting on paper machine cone drives. Paper Mill News 75, no. 34: 67 (Aug. 23, 1952).

Regular inspection of the following points is recommended for the successful maintenance of cone-drive belts: belt surface to indicate the need for cleaning and dressing, the presence of open spots in cemented laps and plies, and belt tension. Directions for shortening belts are given. E.S.

MACHINERY—CHIPPERS

FITZGERALD, O. A. Cash from slash. Am. Forests 58, no. 8: 16-17, 30 (August, 1952).

The author describes the advantages of portable slash chippers as demon-

strated by the University of Idaho, Potlatch Forests, Inc., and the Clearwater and Potlatch Timber Protective Associations. The chippers reduce slash-fire hazards and break up wastes sufficiently small to pack solidly on the ground and decompose rapidly for soil nourishment. Although the chips are at present not suitable for pulping because of the adhering bark and needles, pulp mills are interested in their possible future utilization. 4 illustrations. L.C.

WOOD, HAROLD F., JR. Factors affecting chipper knife performance. Tappi 35, no. 8: 153-5A (August, 1952).

A brief history of the development of the solid-alloy steel chipper knife is given, including a detailed explanation of the manufacturing processes employed by an integrated steel company to produce these knives. Directions for the correct grinding and changing of knives and proper maintenance are given. The grinding of high-alloy steels requires modern grinding equipment and close supervision to prevent damage to the pieces being ground. Other factors which influence knife performance are correct bevel, intelligent approach to the proper time for grinding, and correct installation for full knife utilization. E.S.

MACHINERY—DIFFUSERS

GOTHNER, K. F., and ROBSON, H. T. Improved diffuser washing—Markila-Brax strainers and angle iron supports. Tappi 35, no. 8: 370-3 (August, 1952).

Washes were made in two different-dimensioned groups of diffusers which differed mainly in diameter. The unchanged diffusers were compared with two modifications—Markila-Brax strainers, a Finnish invention, and crossed angle-iron supports. Both these modifications of conventional diffuser design operate on the principle of relieving the pressure of the pulp against the screens, and both were found to be effective, especially in the narrower unit. The Markila-Brax strainers reduced the washing time 58% on the diffuser with the smaller diameter and 29% on the other. The angle-iron supports reduced the washing time 21% on the narrower diffuser and 13% on the other. The quality of washing was about the same in all cases, the soda loss amounting to about 20 lb. of sodium sulfate per ton of pulp. Data on underflow dilution were contradictory; there is perhaps no significant change in underflow dilution when a diffuser is modified with either invention. 2 tables and 5 figures. E.S.

MACHINERY—DRIVE

HILDENBRAND, ADOLF. Description of a paper-machine drive with stepless speed control. Das Papier 6, no. 11/12: 230-3 (June, 1952). [In German]

The modernization of a mechanical paper-machine drive with stepless speed control (P.I.V. gears), including the winder drive, is described. 7 figures. E.S.

MACHINERY—DRIVE, ELECTRIC

PHILIPPI, HERMANN. Winder drives in the paper industry. Das Papier 6, no. 11/12: 212-16 (June, 1952). [In German]

Following a brief discussion of the mathematical fundamentals for the correct selection and dimensions of winder drives, recent trends in motors and regulators are reviewed. 10 figures. E.S.

MACHINERY—DRYERS

WALTER, KARL. The regulation of the dry content of the paper web in the drier section of the paper machine. Das Papier 6, no. 11/12: 225-7 (June, 1952). [In German]

The importance of uniform drying resulting in a uniform moisture content across the paper web is emphasized. A regulator for the steam admission to all drying cylinders is described, which will maintain a preset uniform surface temperature on each cylinder. Methods for controlling the satisfactory operation of the regulator are outlined. E.S.

MACHINERY—ELECTRIC EQUIPMENT

DE FEBER, JOSEPH. Motor care and maintenance technique. Paper Mill News 75, no. 34: 94, 96, 98 (Aug. 23, 1952).

The important factors in good care and maintenance of motors (elimination of vibration; commutator, cable, and bearings care; maintenance of good electrical connections; troubles caused by dust and dirt; and elimination of overheating) and the need for a definite program of inspection, lubrication, cleaning, and keeping of records are discussed. The benefits of such a program are outlined. 1 reference. E.S.

HANTMAN, BENJAMIN. Hints on motor maintenance. Paper Mill News 75, no. 34: 102, 104-5 (Aug. 23, 1952).

Four well-known symptoms of motor trouble (motor does not turn over and is either quiet or noisy, motor does turn over, but does not get speed, and motor runs too hot) and their causes are pointed out; suggestions for a proper maintenance procedure are given, supplemented by 25 figures. E.S.

MACHINERY—JOGGERS

ETS. A. ROUQUET ET GENDRES. Jogging machinery "Martex." Rev. papiers et cartons 15, no. 13: 507-8 (July 1, 1952). [In French]

Different paper joggers constructed by the above firm are described; they are recommended for use prior to converting operations, such as trimming, gumming, perforating, lacquering, and similar operations. 4 illustrations. E.S.

MACHINERY—JORDANS

MÜLLER-RID, W., and PAUSCH, G. The use of jordans for refining coarse lignified fibrous rejects. Wochbl. Papierfabr. 80, no. 11: 397-8, 400, 402-6; no. 13: 491-5 (June 15, July 15, 1952). [In German]

The results of a number of investigations from the experimental plant of Voith at Heidenheim, Germany and mill-scale operations on the refining of coarse rejects are discussed. In a country poor in fibrous raw materials the practice of complete removal of these rejects and utilization for a different purpose (fiberboards or coarse wrapping material) is not economically feasible; the material must be treated in such a way that it can be returned to the original process without deteriorating the quality of the final product. The experiments were made with coarse rejects from groundwood (I), steamed groundwood (II), Asplund pulp (III), and semichemical pulps (IV). The refiner used was a Voith high-speed jordan (V) with different tackles (narrow or broad steel bars on both plug and shell; narrow or broad basalt bars on the shell and narrow steel bars on the plug; and

narrow steel bars on shell and plug, with a very high r.p.m.). The difference in the results obtained with the various tackles was very pronounced. The rubbing action of the basalt bars is not conducive to the separation of splinters into individual fibers (VI) but causes a serious shortening of the majority of them. (VI) depends principally on the frequency of passage of the pulp between shell and plug with a satisfactory clearance (high r.p.m.). The general conclusions drawn from this study are as follows: When hard, coarse rejects from (I) are treated, a (V) with 6 mm.-wide steel bars and an r.p.m. of 950 is the most efficient, provided the throughput is not higher than 6-8 tons/24 hours. At higher throughputs, 1200 r.p.m. and narrower bars should be selected. For less coarse rejects, the tackle of (V) should consist of basalt bars on the shell and steel bars on the plug. For rejects from (II) which are less lignified, a r.p.m. higher than 950 should be chosen; for very strongly lignified rejects with a large percentage of splinters, such as resulting from (III), a r.p.m. of 1200 should be used. The same is recommended for the softer rejects from (IV), provided they contain a large amount of splinters. When r.p.m.'s higher than 1000 are selected, there should always be a sufficient gap between the bars of the plug and those of the shell; for this case the use of narrow (3 mm.) bars is also recommended. The suggestion is made that, after the treatment of coarse rejects from (I) and (II), they should not be returned immediately to the main screening process but should be treated separately in a special chest-and-screening arrangement (which is described briefly) until they are in the correct condition for addition to the main furnish. These results are published to give a general picture of the present trends in this field and not because they represent a final development; additional information will be reported as soon and whenever it becomes available. 18 figures and 6 references. E.S.

MACHINERY—PAPER MACHINE

ANDERSSON, N. New paper machine at Mänttä mill of G. A. Serlachius Oy. Paper and Timber (Finland) 34, no. 7: 263-6 (July, 1952). [In English]

An illustrated description of the new paper machine constructed by Voith in Germany is given; it is designed for the manufacture of unbleached greaseproof paper, is driven by a sectional drive built by Brown, Boveri & Cie in Switzerland, and is equipped with heat recovery units made by AB Finska Fläktfabriken. The present output is approximately 35 tons per 24 hours. 4 illustrations. E.S.

ANON. Hopper paper expansion at Taylorville. Paper Ind. 34, no. 5: 609-11 (August, 1952); *cf.* B.I.P.C. 22: 918.

Essentially the same description of the new Moore & White Fourdrinier machine as in the previous reference is given. 7 illustrations. E.S.

MIKELSON, W. Fourdrinier section load requirements. Tappi 35, no. 8: 337-42 (August, 1952).

Several modern machines have been studied to determine the power distribution throughout the Fourdrinier elements to provide a basis for the re-evaluation of existing power constants used to calculate and predict power requirements on new machines. A more accurate procedure has been derived. 4 tables, 8 figures, and 1 reference. E.S.

SMITH, G. HOWARD. New paper machine boosts production at Merritton. Pulp Paper Mag. Can. 53, no. 8: 72-5 (July, 1952); *cf.* B.I.P.C. 22: 929.

The new Fourdrinier machine housed in a separate building west of the existing Lybster mill is described in detail, including the new Jagenberg winder which was imported from Germany. 6 illustrations of the equipment. E.S.

MACHINERY—PUMPS

CHEMPUMP CORPORATION, *Philadelphia.* New seal-less centrifugal pump. Paper Mill News 75, no. 34: 99, 108 (Aug. 23, 1952).

The design of a new pump is described which eliminates the need for stuffing boxes, packing glands, or other types of seals. 2 illustrations. E.S.

MAYBERRY, W. G. Factors affecting the performance of centrifugal paper stock pumps. Pulp and Paper Manual of Canada 20: 9-13 (1952).

Directions for the correct selection, installation, and operation of centrifugal paper stock pumps are given. 6 figures. E.S.

MACHINERY—ROLLS

KUHN, H. S. Revolving joints for roll misalignment. Paper Mill News 75, no. 34: 60 (Aug. 23, 1952).

The problem of tight joints in revolving rolls and some of the possible corrective measures (including carbon or Teflon seals) are described. The special problems presented by rotating syphons are mentioned. E.S.

MACHINERY—SLITTERS AND WINDERS

DAY, FREDERICK T. Paper conversion and usage. No. 35. Paper cutting, slitting, trimming and reeling. World's Paper Trade Rev. 138, no. 1: 34-5 (July 3, 1952); *cf.* B.I.P.C. 22: 932.

The author describes briefly the procedures and machinery used in slitting from the reel and in rotary cutting, which many paper-converting processes, including printing and boxmaking, require. Reference is made to the Masson Supercutter (*cf.* B.I.P.C. 22: 917), one of the most modern machines fitted with layboy and turntable reelstands with three or four times the output of the average cutting machine and high accuracy of cut. 2 illustrations. E.S.

MATERIALS HANDLING

BELL, G. E. The handling and transportation of sawmill waste for pulpwood. Canada. Dept. of Resources and Development. Forestry Branch. Forest Products Laboratories Division. Mimeograph 0-164: 14 p. (June, 1952).

The types of machines used for the handling and transportation of sawmill waste in the form of slabs, edgings, and chips by rail, trucks, and barges are described and illustrated. 19 illustrations. E.S.

DAY, FREDERICK T. Mechanical handling and storage of paper. Parts 2 and 3. Paper Box Bag Maker: 162-4; 209-12 (April, May, 1952); Paper Market: 132-4; 142-6 (May, June, 1952); Paper-Maker (London) 123: 52, 56-61 (Mid-summer, 1952); *cf.* B.I.P.C. 22: 673.

The importance of an efficient layout, hand trucks, unit loads, palletization, types of pallets, roller conveyors, spirals and chutes, and hoists are

discussed in Part 2. Part 3 deals with the proper care of paper during storage, the handling and use of new and matured stock, and the specification of essential details when placing an order. 5 illustrations. E.S.

DAY, FREDERICK T. Mechanical handling and storage of paper. Part 4. Paper Box Bag Maker: 251-2, 254, 256 (June, 1952); Paper-Maker (London) 124, no. 1: 35-7, 46 (July, 1952); Paper Market: 18-21 (July, 1952).

In the first part of the article, additional handling devices are discussed, including the paper roll grab, the Teleflex unit-construction conveyor, and wire-mesh containers or crates for in-plant use and outside deliveries. The concluding part deals with slitting and sheeting, slitting from large reels, rotary cutting to sheets, and precision rewinding and slitting to reels of narrower widths. 2 illustrations. E.S.

MILL MANAGEMENT

ELLIOTT, NORMAN J. Job evaluation. Am. Boxmaker 41, no. 8: 20, 22-3 (August, 1952).

Suggestions are given for the evaluation of a worker's services according to data which can be charted and graphed objectively. The selection of factors to be taken into account in rating a job and the advantages of such a rating in labor-management relations are listed. 2 charts. L.C.

ETHERIDGE, OLIVER R. Analysis of maintenance costs. Paper Mill News 75, no. 34: 56, 58 (Aug. 23, 1952).

Most maintenance men desire cost data to be used for comparing the effectiveness of their own maintenance programs. The author postulates that the effectiveness of a maintenance program can be judged only in relation to the physical conditions and management policies prevailing in the particular plant; it may be greatly affected by accounting procedures, and wage, labor, replacement, safety, plant appearance, and production policies, to name only a few of the important variables. However, there are many opportunities for a plant to develop its own reference standards. As an example, the maintenance analysis of the A. E. Staley Manufacturing Co. is described, and the beneficial results of a new classification of accounts for all job orders used with all maintenance work are outlined; conditions in other plants may indicate other approaches to the problem. E.S.

HOUCK, L. S. Practical suggestions for an effective preventive maintenance program. Paper Mill News 75, no. 34: 88 (Aug. 23, 1952).

Practical suggestions for providing the basic framework of a maintenance program are given, including the initial purchase of equipment, its installation, control equipment, and general directions for its upkeep. E.S.

NORDLING, ROLF. Is it possible to establish a common outlook between the management of an enterprise and its personnel? Papeterie 74, no. 6: 346, 349, 351, 353, 355 (June, 1952). [In French]

The possibilities for creating improved employer-employee relations are discussed. 2 figures. E.S.

RABER, C. F. Industrial relations and the mill superintendent. Paper Mill News 75, no. 33: 24-6 (Aug. 16, 1952).

The measure of the success of managers depends upon how well they mold the attitudes of their people and how well they influence them to want to do a good job and to have a sense of teamplay. How people feel depends upon how much they understand. The important part played by foremen in interpreting and passing along information is emphasized; to do a good job, foremen must be given sufficient information and be helped in using it effectively in dealing with those under their supervision. E.S.

PACKAGING

ANON. Corrugated for vacuum cooled lettuce. Fibre Containers 37, no. 7: 40, 45-6, 48, 50 (July, 1952).

The principles of the Vacuum Cooling Process (I) and its application to the packaging of lettuce in connection with corrugated boxes are described. (I) permits the packing and stapling of boxes in the field; they are delivered on trucks to the cooling plant, unloaded by a lift truck onto pallets holding 32 boxes, which are then carried into the cooling chambers on dollies; a vacuum produced by multistage steam ejectors for a cycle of 20 minutes is applied, whereby the temperature of the lettuce is lowered from 60 to 80°F. to a controlled temperature of 32°. The cooled pallet loads are taken from the other side of the chamber, and the boxes are transferred to a conveyor belt which transports them to refrigerator cars. The advantages and problems connected with (I) are discussed, with particular reference to the requirements of the corrugated boxes used. Various other tests seem to demonstrate that the process is applicable to any leafy vegetable (spinach, endive, cole slaw, etc.) with a large surface area in relation to its volume, whereas it does not seem to be suitable for cucumbers, tomatoes, string beans, carrots, or similar vegetables with a small surface area in relation to their volumes. 7 figures. E.S.

ANON. The trend to one-cup coffee. Modern Packaging 25, no. 12: 110-12 (August, 1952).

An individual one-cup coffee bag has been developed from a porous, nonwoven, heat-sealing cellulose fabric which allows free water circulation and yet retains the finely ground coffee, has a high wet strength, is chemically inert and tasteless, and does not absorb coffee oils which cause rancidity. The bags are formed and filled on high speed machines and packed in glass vacuum jars or transparent saran or Pliofilm envelopes. 7 illustrations. L.C.

BREMER, GENE. Frozen foods—a packaging potential. Ind. Rept. Containers and Packaging 5, no. 2: 4-12 (Summer, 1952); Packaging Parade 20, no. 235: 116-21 (August, 1952); Am. Paper Converter 26, no. 8: 16-17, 69 (August, 1952). [Abridgment]

Based on a survey made available by the Department of Commerce, the growth in the frozen-food industry and the important part played by packaging are outlined. The data are presented to assist manufacturers of containers and packaging materials in planning markets and developments. 6 tables and 3 diagrams in the first, and 6 tables and 6 figures in the second reference. E.S.

BUCHANAN ELECTRICAL PRODUCTS CORPORATION, *Hillside, N.J.* Packaging committee discovered what was needed to satisfy jobbers, distributors. Packaging Parade 20, no. 235: 70-1, 77 (August, 1952).

The Corporation has adopted 0.030 caliper kraft-stock, metal-edge boxes for its metal products. The boxes are not broken in transit by the comparatively heavy moving items within and remain in good condition while in use by consumers. Box-forming, packing, and labeling procedures are described. 3 tables and 8 illustrations. L.C.

LOEFFLER, HEINZ H. Military packaging reorganized. Modern Packaging 25, no. 12: 116-21 (August, 1952).

The author describes the new Packaging Division of the Munitions Board Standards Agency which was set up to improve liaison with industry and to centralize technical direction and supervision over packaging branches of the three Armed Services. 2 organizational charts. L.C.

MODERN PACKAGING. Meat today. Modern Packaging 25, no. 12: 85-90, 194 (August, 1952).

Fresh as well as frozen meats and processed items are being prepackaged in cellophane wraps and displayed in self-service coolers. Odorless, odor-proof, virgin-pulp molded trays and bleached backing boards with low absorptive properties and high rigidity are used with the cellophane for wet or limp meats. Jewel Food Stores' effective wrapping, labeling, dating, and display methods are described to illustrate this trend, and the advantages of self-service meat retailing are discussed. 12 illustrations. L.C.

MODERN PACKAGING. Sealtest ice cream. Modern Packaging 25, no. 12: 102-7 (August, 1952).

The history of ice-cream packaging is traced from the bulk bucket and waxed paper "brick" wrapping to the present unlined, fully automatic-filled carton in various convenient sizes. National Dairy Products Corp. is commended for its full-color, fine-screen printed Sealtest cartons which represent the best in visual packaging techniques, especially in self-service competition. 14 illustrations. L.C.

PAPER—CONVERSION

MCMILLAN, JOHN H. Raw stock requirements for the converter. Can. Pulp Paper Ind. 5, no. 8: 11-14, 16 (August, 1952).

The author describes the converting operations of three grades of tissue paper (bathroom tissues, napkins and serviettes, and wax lunch rolls) to explain certain demands for raw-stock requirements, as dictated by the converting plant's quality standards, the ultimate use, and consumer demand. 3 diagrams. E.S.

WETLI, C. A. Processing soft papers. Paper Mill News 75, no. 31: 12, 14 (Aug. 2, 1952); Am. Paper Converter 26, no. 8: 9-11, 69 (August, 1952); Southern Pulp Paper Manuf. 15, no. 9: 46, 48-9 (September, 1952).

The author describes basic, modern, high-speed machinery for the conversion of toilet paper, towels, napkins, and facial tissues made by the Hudson-Sharp Machine Co.; included are winders, slitters, folding and interfolding and packaging machines, and printing equipment. 4 illustrations in the second reference. E.S.

PAPER—DEFECTS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Empire State Section,* and Canadian Pulp and Paper Association.

Technical Section. Niagara Branch. Quality requirements by paper consumers. Tappi 35, no. 8: 110-12A (August, 1952).

In this panel discussion of the joint meeting, the following papers (listed by authors and titles) were presented: Brown, John. Magazine paper, p. 110-11A; and Gray, H. M. Consumer's quality requirements for board and container papers, p. 111-12A. Two other papers by B. L. Corbett and Charles Cornell were not printed. E.S.

PAPER—MERCHANDISING

CARPENTER PAPER COMPANY, *Grand Rapids, Mich.* $$$ result from a "library of creative ideas." Am. Paper Merchant 49, no. 8: 18-19, 54-5 (August, 1952).

The merchandising program of the Carpenter Paper Company revolves around its "library" of ideas for different ways to use Carpenter's papers. In addition, printers are sent paper samples which are filed in cabinets kept up to date by the company salesman. A dummy-printed specimen service and a direct-mail campaign, including two house-organs and the sample-cabinet system, are described. 1 illustration. L.C.

NICHOLSON, PAUL C. The place of the wholesaler in a free economy. Paper Sales 12, no. 8: 14-15, 38-9 (August, 1952).

The vital position of the middleman in expediting factory-to-retailer transactions is explained. (This article first appeared in the Atlantic Monthly.) The author indicates that the many services performed by the wholesaler justify the added cost, and points out that the forces of a free economy would have replaced the middleman long since, if he did not perform a necessary function at lower cost or more efficiently than a substitute. L.C.

PAPER—PERMANENCE

REID, L. S. Permanent papers. Tappi 35, no. 8: 126A (August, 1952).

The meaning of the term "permanent" is defined; a sheet which meets the use requirements of a permanent paper is made from new white, cream, or unbleached stock, properly prepared, tub-sized with animal glue and, if necessary, opacified with fillers. Its rosin content should not be higher than 1.2% and its pH be less than 5.0 for white and 4.7 for colored paper; it must have the required strength properties, particularly folding endurance, and good printing, writing, and erasing qualities. E.S.

PAPER AND PULP INDUSTRY

BOYCE, CHARLES W. Future expansion of pulp production. Paper Mill News 75, no. 33: 10-12, 14, 16, 21-2 (Aug. 16, 1952).

The author interprets the findings of recent surveys made by the United States Pulp Producers Association on the expansion of United States woodpulp-producing capacity and the corresponding consumption-capacity increase. With the use of graphs plotted to show actual production or consumption, theoretical capacity, and 1930-1950 production or consumption trends, he describes the over-all situation, as well as the capacity by woodpulp classifications. The nature of capacity growth and expansion criteria are explained, and the dangers of too-rapid production expansion are pointed out. Both the Defense Administration and industry share the responsibility of keeping the capacity potential within conservative yet optimistic limits. 7 charts. L.C.

COLLINS, R. Impressions of Indian paper industry. Indian Pulp and Paper 6, no. 10: 436-7 (April, 1952).

The author advocates the formation of a technical section for the paper industry in India. L.C.

ORGANIZATION FOR EUROPEAN ECONOMIC CO-OPERATION. *Pulp and Paper Committee.* Trend during first half of 1952 and prospects for the near future. Paper Trade J. 135, no. 7: 22, 24, 26, 28 (Aug. 15, 1952).

A rise in paper and board production during 1951 (through an 18% increase in wood pulp availability, a 33% greater recovery of wastepaper, and a 5% increase in the availabilities of other fibers) in the member countries of the Organization for European Economic Co-operation is reported. A decline in demand for pulp and paper has resulted because of anxious overstocking, government import restrictions, and new price ceilings in the various countries. Further decline in the market is anticipated. 14 tables. L.C.

WALDHEIM, GOTTFRIED VON. The paper industry of Portugal. Das Papier 6, no. 11/12: 276-7 (June, 1952). [In German]

Following a brief review of the earliest Portuguese documents and mills, the present status of the domestic industry is reviewed. The output is not sufficient to cover the country's total consumption, and pulp and paper are being imported. Statistical data are included. 2 tables. E.S.

PAPER AND PULP INDUSTRY—EDUCATION

CALKIN, JOHN B. The technical program at the University of Maine. Tappi 35, no. 8: 130-2A (August, 1952).

The University of Maine Pulp and Paper Foundation is a group of 41 companies and 125 individuals who have invested in the scholarship program for students of paper technology at the university. The development of the Foundation and the success of the school's program are discussed. L.C.

SRIKANTAN, D. L. Paper technology as a post-graduate study. Indian Pulp and Paper 6, no. 12: 516-17 (June, 1952).

India has at present no facilities for post-graduate training for the pulp and paper industry, with the exception of the six-month refresher course offered at the institute at Dehra Dun to students appointed by the state governments or mills contributing to the institution. The urgent need for technical training facilities in this field on the university or institute-of-technology level is emphasized. E.S.

PAPER AND PULP MILLS

ANON. Rayonier's improvements. Pulp & Paper 26, no. 9: 42, 44 (August, 1952).

A brief description of a new high-density stock pump in the beater room and a new Valley Iron Works headbox on a Fourdrinier machine at the Hoquiam, Wash. mill of Rayonier is given. Reference is also made to the development of Raylig road binder which is used in a 25% solution; when shipped larger distances, it is concentrated to 50% and Dowicide G is added to prevent bacterial growth. Some of the product is sold to the

manufacturers of linoleum paste, and research is carried out to find more customers. 8 illustrations. E.S.

EVANS, JOHN C. W. Alliance Paper Mills forges ahead at all divisions. Pulp Paper Mag. Can. 53, no. 8: 68-71 (July, 1952); *cf.* B.I.P.C. 23: 28.

The modernization program of the different mills of the Alliance Paper Mills Limited (sulfite and specialty board and paper mill [Lincoln mill] and specialty paper mill [Lybster mill] at Merritton and the coating mill at Georgetown) is described briefly. 6 illustrations. E.S.

PULP & PAPER. See Rhinelander run: three new machines in past decade. Pulp & Paper 26, no. 9: 26-8, 30, 32, 36-8, 40 (August, 1952); *cf.* B.I.P.C. 22: 265.

Following a brief history of the mill and its personnel, the recent expansions (including the No. 8 glassine paper machine, the new electric power-generating plant, bleach plant, and by-products division) are described. A 40-ton semichemical plant for making glassine pulp by a neutral sulfite process is the major project for 1952. 32 illustrations of the equipment. E.S.

SOUTHERN PULP AND PAPER MANUFACTURER. Florida Kraft Center of St. Regis Paper Company has new pulp and paper facilities in production. Southern Pulp Paper Manuf. 15, no. 8: 82-6, 89-90 (August, 1952); *cf.* B.I.P.C. 22: 833, 918-20.

An illustrated description of the expanded pulp- and papermaking facilities at the Cantonment mill of the Alabama Pulp and Paper Co. (now merged into the St. Regis Paper Co.), including the new Bagley and Sewall Fourdrinier machine, is given. A list of principal suppliers is appended. 10 illustrations. E.S.

WATERS, VINCENT F. Hudson Pulp and Paper Corporation's expanded pulp, paper, and converting plants in operation at Palatka, Florida. Southern Pulp Paper Manuf. 15, no. 8: 21-2, 24-5, 28, 30, 32, 35-6, 38, 40, 42, 44 (August, 1952); *cf.* B.I.P.C. 22: 423.

The major expansion of the completely integrated sulfate pulp, paper, and converting mills at Palatka, Fla. has been completed, although some additional converting machinery remains to be installed. A detailed description of the installations from pulpwood operations through the converting stages is given; a list of principal suppliers is appended. In the expanded program, the capacity was doubled to 400 tons per day; the grades of paper produced include kraft, wrapping, butchers, gumming, grocery bags and sacks, and multiwall sacks. 27 illustrations of the equipment, including a diagram of the new Pusey and Jones paper machine. E.S.

PAPER BREAKS

McWHORTER, H. L. Newspaper production. New England Printer and Lithographer 15, no. 5: 28- (June, 1952); Am. Newspaper Publ. Assoc., Research Bull. no. 57: 28 (July 18, 1952). [Abstract only available]

The author concludes from tests conducted at the Goss Printing Press Co. that paper is much more uniform and possesses greater strength than

is commonly supposed, so that it is not the first cause of web breaks; he considers that 75% of the faults blamed on paper are actually faults of the printing machine. Newly manufactured paper is rewound at a tension of four to five pounds per inch of width to prevent telescoping during shipment. On the printing machine, the normal pull is about one half pound tension per inch of width. Paper, even with slime holes, edge cuts, etc., is therefore about 10 times stronger than is actually necessary under normal conditions, and web breaks are caused by mechanical defects in the press which strain the paper abnormally. Misalignment, out-of-round rotating elements, and faulty tension control on the paper web are listed as the mechanical sources of web breaks. The author concludes with a critique of contemporary tension-control devices and a statement of criteria for an improved system. When the Goss Printing Press Co. employed such a system, it was able to run at 2100 f.p.m. with a remarkable freedom from web breaks. E.S.

PAPER MANUFACTURE

ANON. The A B C of papers and boards. Papetier 6, no. 5: 46-8 (May, 1952). [In French] *cf.* B.I.P.C. 22: 766.

The different uses of slow and free stocks, mottled and cloud-finish paper, two-sidedness, the correct handling and storing of paper at the printer, and paper sizes used in France 100 years ago are discussed briefly. 1 table. E.S.

PAPER SIZING

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Chicago Section.* Panel discussion on surface sizing materials. Tappi 35, no. 8: 115-20A; discussion: 120-1A (August, 1952).

• The following brief papers (listed by authors and titles) were presented at this meeting: Kumblad, Warren. Wax emulsions, p. 115-16A; Casey, James P. Starches, p. 116-17A; Vallandigham, V. V. Sodium alginates, p. 117-18A; and Ware, Harris. Carboxymethylcellulose, p. 118-20A. E.S.

PAPER SPECIALTIES

ANDRE PAPER BOX CO., *San Francisco.* Pop-set 'box-bag.' Am. Boxmaker 41, no. 8: 14-15 (August, 1952).

A popcorn container which resembles a bag, opens upon pressure with one hand, and stays open for filling has been designed. The same price as one-color boxes, it is made from pure Potlatch bleached sulfate pulp and printed in three colors. 6 illustrations. L.C.

BATSON, WILLIAM G. There's a big place for place mats. Paper Sales 12, no. 8: 10-11 (August, 1952).

The value of printed paper place mats as an advertising, good-will, and labor-saving medium is stressed in a series of examples of their successful use in the Pacific Northwest. Suggestions for the promotion of this specialty item are given to paper salesmen. 2 illustrations. L.C.

CHALKLEY, LYMAN. Photometric papers sensitive only to short wave ultraviolet. J. Optical Soc. Am. 42, no. 2: 387-92 (June, 1952).

The author describes the development of photosensitive papers from qualitative filter paper which respond only to the shorter wave ultraviolet and thus provide a material for recording and measuring this region with

the ease of a photographic printing paper. The basis of the new papers lies in the activation of the triphenylmethane dye cyanides, so that they will react to ultraviolet light with the formation of the associated dyes. Activators have been found which produce photosensitive mixtures suitable for use on paper. The sensitized papers print fully formed, permanent images. Materials are described which are sensitive to 3250 A. and shorter and to 3350 A. and shorter wavelengths, but are quite unaffected by sunlight through such a colorless glass as Corning No. 7380. Actinometers may be prepared to measure the short-wave ultraviolet output of lamps, the erythemal component of sunlight, and dosages of therapeutic ultraviolet. Another use for the papers is in recording instruments where a beam of ultraviolet light may be employed to trace a line on the moving paper, which is fully visible behind a window of colorless, ultraviolet-absorbing glass. 2 tables and 8 references. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 37. Metal foil, bronze, coated and printed, lined papers and boards. World's Paper Trade Rev. 138, no. 5: 332-3 (July 31, 1952).

The manufacture of gold foils and bronzes, metal-lined papers and boards, the methods of printing gold and silver, and the use of metallic inks for different printing processes are described. 1 illustration. E.S.

DUMONT ENTERPRISES INC. *Englewood, N.J.* Sterilization-resistant paper was needed and obtained. Packaging Parade 20, no. 235: 56-7 (August, 1952).

Dumont Enterprises, Inc. packages a surgical lubricant powder (Bio-Sorb) which must be sterilized in its container before use. The properties of the vinyl-coated opaque glassine stock (manufactured by Riegel Paper Corp.) and of the heat-seal adhesive are given; the filling procedure and wall-dispenser carton are described. 7 illustrations. L.C.

GEORGE, HARRY O. Business papers. Tappi 35, no. 8: 126-8A (August, 1952).

The author gives a brief outline of the requirements of papers used in the machines of International Business Machines Corp. and the methods by which the papers made for these machines are tested. Examples of such functional papers include punched cards, perforated paper tapes, rolls of bond paper for reports (interleaved with carbon paper, if multiple copies are required), test-scoring machine answer sheets, and similar grades; all these must meet very exacting specifications with regard to basis weight, thickness, strength and durability, moisture content, coefficient of friction, curl, dimensional stability, freeness from conductive particles and static electricity, abrasiveness, and aging quality. Wherever possible, standard testing procedures are employed; when none are available (as in the case of the coefficient of friction), instruments and techniques are developed. When confronted with the problem of providing paper for a newly developed machine, samples of paper believed to be most satisfactory are tested under various atmospheric conditions and the paper with the best performance is selected for further improvement. Established specifications are constantly being revised in accordance with changing conditions and requirements. E.S.

KERPING, P. Household paper. Papetier 6, no. 5: 63 (May, 1952). [In French]

The gradual introduction of paper towels, handkerchiefs, napkins, and similar items into French life and households is mentioned. Although the

articles still belong in the luxury class, their quality cannot yet compare with the standards of American mass production; however, progress is being made. 1 illustration. E.S.

STAATS, P. L. Electrical papers. Tappi 35, no. 8: 128-130A (August, 1952); *cf.* B.I.P.C. 22: 931.

The problems and requirements of electrical insulating papers (coil, saturating, slot, and condenser papers, pressboards, and vulcanized fiber) are dictated by usage which, in turn, determines the raw materials, the manufacturing process, and the quality of the finished product. The author discusses some of the important physical, chemical, and electrical properties of paper made for electrical apparatus, including freedom from dirt, acidity and alkalinity, absence of electrolytes, ash, dielectric strength, and power factor; these must be closely controlled. The development of new paper insulating materials must necessarily start with the pulp and take into consideration the processing of the stock through all stages of the manufacturing process to produce a sheet suitable for the required purpose. 2 tables and 1 figure. E.S.

TAYLOR, H. W., PERRY, L. M., and HEINZELMANN, W. C. Heat-seal packet papers. Modern Packaging 25, no. 12: 135-6 (August, 1952).

The Nashua Corp. has developed heat-sealable papers under the trade name SAYV for the unit packaging of materials like foods, medical and pharmaceutical supplies, and chemicals. The required properties of the papers and coating adhesives are outlined. 2 illustrations. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

McLAREN, K. The spacing of scales for assessing the effect on the pattern in fastness testing. J. Soc. Dyers Colourists 68, no. 6: 203-4 (June, 1952).

The spacing of the first gray scales considered for assessing loss in depth in fastness testing has been found to be unsatisfactory, as the resulting assessments do not reveal the small but important differences between patterns of good fastness; this defect is inherent in all equally spaced scales. It is shown that satisfactory results are obtained when the scales are spaced geometrically. Four geometric gray scales have been prepared and sent on behalf of the International Standards Organisation to the Fastness Tests Committees of France, Germany, Switzerland, and the United States in the hope that agreement on the spacing may be achieved. 2 tables and 1 reference. E.S.

McLAREN, K. The use of the grey scale for assessing the effect on the pattern in fastness testing. J. Soc. Dyers Colourists 68, no. 6: 205-6 (June, 1952).

It has been shown that a gray scale can be used for assessing not only loss in depth but also changes in hue and/or brightness and any combination of these three factors. A method is suggested for recording the effect on the pattern which requires the use of neither subjective terms nor fixed standards in different hues. 2 tables and 4 references. E.S.

RICKETTS, R. H. The rates of fading of the S.D.C. light fastness standards (B.S. 1006). J. Soc. Dyers Colourists 68, no. 6: 200-3 (June, 1952).

The rates of fading of the Society of Dyers and Colourists light fastness standards 1 to 6 have been determined by exposing portions of each standard for different times in a fading lamp and finding the difference between the exposed and unexposed patterns, optically and visually. The reflectance curves of the patterns have been obtained, and two color-difference formulas used to calculate the color change, on exposure, in just perceptible steps. It is shown that the results obtained optically do not correspond to the observed differences. In view of this, the differences have been estimated visually against a gray scale; the results obtained show that the spacing of the standards 1 to 6 is satisfactory. 3 tables, 4 figures, and 7 references. E.S.

SOCIETY OF DYERS AND COLOURISTS. *Fastness Tests Co-ordinating Committee. Light Fastness Subcommittee.* Method of test for determining the fastness to daylight of coloured textiles. J. Soc. Dyers Colourists 68, no. 6: 197-200 (June, 1952).

The second draft revision (March 11, 1952) of British Standard 1006: Part 1 is reproduced for suggestions and comments by members before the document is submitted to the British Standards Institution in its final form. 1 table, 2 figures, and 2 references. E.S.

PHYSICAL TESTING—PAPER—BURSTING STRENGTH

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Bursting strength of paper. Tappi 35, no. 8: 145-7A (August, 1952).

The text of a proposed revision of TAPPI Official Standard T 403 m-47 is presented; the revised method has been approved as a Tentative Standard and criticisms are requested. 2 tables and 7 references. E.S.

PHYSICAL TESTING—PAPER—GLOSS

LIEBERT, EHRHARD, and FÜHRLBECK, EDWIN. The suitability of the glossmeter for testing running paper webs on the calender. Das Papier 6, no. 11/12: 205-11 (June, 1952). [In German] *cf.* B.I.P.C 21: 866.

The authors describe the alterations required on the laboratory glossmeter to adapt the instrument for the continuous measurement of gloss on a paper-web traveling through a calender stack, and the relationship of gloss values to smoothness and closeness of paper surface. The sensitivity of the instrument is now checked by means of a ground glass plate; a continuously operating blower removes dust accumulating during use and moisture condensation resulting from differences in temperature. The following factors were found to exert an influence upon the results: temperature, variations in voltage, nonuniform contact of the instrument with the paper surface, speed of calender operation, and loading of the calender rolls. The hardness of the wound rolls did not exert any effect on the measurements; static trouble was not encountered with the instrument. The influence of paper furnish, presence of fillers, beating degree, moisture content of the paper web, etc. has been studied extensively by Brecht and Steinböck (*cf.* B.I.P.C. 9: 402-3; 11: 405) and reference to their data is made. In the lower ranges of calendering, the wire side was found to exhibit usually higher gloss values than the felt side, whereas the opposite is true with highly calendered paper: here, the felt side is generally the glossier one. The glossmeter indicated considerable variations in values across the paper web which can only be accurately evaluated by means of an instrument; visual

inspection is not sufficiently acute for this purpose. The importance of uniform moistening of the paper web prior to calendering is confirmed by these data. 1 table, 18 figures, and 4 footnotes. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

ANON. Methods of measuring moisture content. Paper-Maker (London) 123: 22, 61 (Mid-summer, 1952).

A new moisture tester is described, which is based on the measurement of the capacity of a condenser in which the paper to be tested forms the dielectric between the two plates. The hydrotester is of Swiss origin and was developed by Albert Mark of Zurich. E.S.

ANON. Paper hygroscope. Am. Pressman 62, no. 9: 22 (August, 1952).

A brief description is given of the new model paper hygroscope which the Cambridge Instrument Co. developed with the assistance of the Lithographic Technical Foundation. 2 figures. E.S.

MARCONI INSTRUMENTS LTD., *Longacres, St. Albans, England.* The Marconi moisture meter. World's Paper Trade Rev. 138, no. 7: 505-6 (Aug. 14, 1952).

An electronic method of measuring moisture in paper and boards and the portable instrument designed for this purpose are described. 2 illustrations. E.S.

PHYSICAL TESTING—PULP—SURFACE AREA

BEAMESDERFER, J. W., THODE, E. F., CHASE, A. J., and HUBBARD, R. E., JR. Dye adsorption on wood pulp. I. Adsorption of direct dye on unbeaten sulphite pulp. Tappi 35, no. 8: 374-9 (August, 1952).

In an attempt to develop a simple and rapid method for the evaluation of the specific external surface of pulp fibers, a study was made of the adsorption of a direct dye on fibers from dilute aqueous solutions. Isotherms at 25°C., for the adsorption of Benzo fast scarlet on unbeaten fibers from bleached sulfite pulp, are presented. The specific adsorption of the dye (milligrams of dye adsorbed per gram of dry pulp) was plotted as a function of the final dye concentration and isotherms of the Langmuir type were obtained. From a knowledge of the saturation value in the adsorption process, as determined from the isotherm, and from a knowledge of the area of the dye molecule presented for adsorption, the calculation of an "apparent" area of the fibers is possible. An attempt was made to separate the process of adsorption on the external surface of the fibers from the slower process of diffusion of the dye into the microscopic and submicroscopic pores and crevasses. Results are presented on experiments designed to give information concerning the effect of the electrolyte concentration. A comparison of the apparent specific surface of fibers obtained by this dye adsorption method with the areas obtained by the well-known silvering and liquid permeability methods is presented. 2 tables, 4 figures, and 13 references. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Specific external surface of pulp. Tappi 35, no. 8: 147-50A (August, 1952).

A proposed revision of TAPPI Suggested Method T 226 sm-46 is presented; this method is not a TAPPI Standard. 1 table, 2 figures, and 2 references. E.S.

THODE, E. F., BEAMESDERFER, J. W., and CHASE, A. J. Dye adsorption on wood pulp. II. Relation of dye adsorption to physical properties of beaten sulphite pulp. Tappi 35, no. 8: 379-84 (August, 1952).

The application of a technique of adsorption of direct dye from a dilute solution to the evaluation of properties of beaten pulp fibers is described. The correlation of the specific adsorption of a dye (in milligrams of dye per gram of dry pulp) with the beating time and the physical properties of handsheets is reported. The relationship of this specific dye adsorption to the external specific surface as determined by the silvering technique and the permeability technique is also reported and discussed. It is concluded that the specific adsorption of a direct dye under the experimental conditions employed is directly related to the external surface of the pulp fibers. The specific adsorption of a dye in the absence of an electrolyte, which has also been studied, is shown to increase with beating at a rate materially different from that found in the presence of an electrolyte. Further investigations into the fundamental significance of this phenomenon are considered desirable. 6 figures and 14 references. E.S.

PLASTIC FILMS—TESTING

UMMINGER, OTTO. Description of an instrument for measuring the blocking of plastic films. Kunststoffe 42, no. 6: 169-70 (June, 1952). [In German]

The instrument permits the simultaneous measurement of the blocking tendency of six rectangular film samples cut from a film 0.4 mm. or less in thickness; it consists of a torsion balance and clamping ring into which the six folded samples are inserted and exposed to a definite pressure and temperature. The force required to separate the two sections of the folded samples is indicated in g./sq. cm. upon a scale. The maximum deviation from the mean value of six samples is ± 4%. The cut samples may be stored prior to the test in folded condition at different pressures and temperatures for different periods. 1 table and 4 illustrations. E.S.

POISONS

LUNDGREN, KARL DAVID, and SVENSSON, ÅKE. The toxicity of organic mercury compounds. Svensk Papperstidn. 55, no. 13: 472 (July 15, 1952). [In Swedish]

From a Swedish medical institution attention is drawn to the high toxicity of certain organic mercury compounds (such as phenylmercuric acetate) and the dermatological hazards which they present. The claims for low toxicity found in the advertising literature for this fungicide do not correspond to actual facts. Although no serious accident has yet been recorded, all workers handling the compound either in the small envelopes or the containers for applying the regular dosages should be warned about the existing hazards. If an envelope should accidentally burst, the spilled powder should not be touched with the bare hands. 5 references. E.S.

POLYSACCHARIDES

ANDREWS, P., HOUGH, L., and JONES, J. K. N. Mannose-contain-

ing polysaccharides. I. The galactomannans of lucerne and clover seeds. J. Am. Chem. Soc. 74, no. 16: 4029-32 (Aug. 20, 1952).

The galactomannans of lucerne and clover seed are found to be similarly constituted. Both polysaccharides are highly branched and contain D-galactopyranose end groups combined with chains of 1,4- or 1,6-linked D-mannose residues, which are probably in the pyranose form. 26 footnotes. E.S.

ANDREWS, P., HOUGH, L., and JONES, J. K. N. Mannose-containing polysaccharides. Part II. Galactomannan of fenugreek seed (*Trigonella foenum-graecum*). J. Chem. Soc.: 2744-50 (July, 1952).

The galactomannan of fenugreek seed has been shown to consist of D-galactose and D-mannose in the approximate ratio of 5:6. Hydrolysis of the methylated polysaccharide gave 2,3,4,6-tetramethyl-D-galactose (5 parts), 2,3,6-trimethyl-D-mannose (1 part), and 2,3-dimethyl-D-mannose (5 parts). In a consideration of these results, the structure of the galactomannan and its relation to the other galactomannans are briefly discussed. 1 table. E.S.

PRINTING AND PRINTER'S INK

PARSONS, BASIL M. Printed, embossed and die-cut specialties. Graphic Arts Monthly 24, no. 8: 8, 10, 12, 14, 16, 152, 154 (August, 1952).

The advantages of the hand-fed platen press in producing printed, embossed, or die-cut items are pointed out. Opportunities for profitable undertakings can be found in the printing of folding paper boxes, greeting cards, toys, games, and puzzles, advertising displays, wooden items, corrugated and solid-fiber boxes, and automotive gaskets. Roll-leaf stamping is also discussed. 3 figures. L.C.

PRINTING AND PRINTER'S INK—BRAILLE

ANON. U.f. resin used in solid-dot Braille printing. Brit. Plastics 25, no. 278: 232-4 (July, 1952).

A new system of Braille production is described in detail, which employs a relief printing process for double-sided printing of solid-dot Braille by means of perforated stencils and an ink with a urea-formaldehyde base. Thinner paper can be used with the new process (35 g./sq. m. instead of 135 and 190 g./sq. m.) than in the embossed Braille, and the fact that the dots are fixed to the sheet instead of the paper being embossed allows for printing on both sides of a sheet which results in a big saving in bulk. The dots are incompressible, firmly attached to the base, and more resistant to tactual pressure than the embossed characters. The process was developed by J. Groak, an independent consultant, and E. J. Pyke, the technical officer of the National Institute for the Blind in London, in conjunction with a number of firms. 6 illustrations. E.S.

RADIOACTIVITY

BRUNTON, H. D. Atomic energy helps make paper. Pulp and Paper Manual of Canada 20: 15-17, 19 (1952).

The nature and source of isotopes, the properties of beta and gamma rays, and present applications of radioactive isotopes in the pulp and paper industry are discussed, including the Betameter for the control of paper

basis weight, the Gammagage for checking kraft digester corrosion, the reflection gage for the measurement of wall thickness or liquid level, gamma-ray examination of welded joints, and the Baie Comeau experiment with tracer isotopes (*cf.* B.I.P.C. 21: 577). 6 illustrations. E.S.

RAW MATERIALS

ANON. Castor oil plant and illuk grass. Paper Making and Paper Selling 71, no. 2: 10, 12-13 (Summer, 1952); *cf.* B.I.P.C. 22: 654, 664-5.

Recent studies at the Forest Research Institute, Dehra Dun, India are reviewed. E.S.

ANON. Colonial materials for paper making. Paper Making and Paper Selling 71, no. 2: 14-16 (Summer, 1952).

The activities of the Colonial Products Advisory Bureau (Plant and Animal) with regard to studies on materials suitable for papermaking are reviewed briefly. E.S.

RAYON—VISCOSE PROCESS

MESKAT, W. Industrial applications of rheology. Chemie-Ingenieur-Technik 24, no. 6: 333-8 (June, 1952). [In German]

Rheological influences are shown to play an important role in industrial processes. Examples from the rayon industry are used to illustrate the different behavior of the spinning solution in the various processing stages. Evidence is presented to show that the variations in the flow curves are based on changes in the macromolecular structure of the cellulose in solution—i.e., its polydispersity. By regular rheological mill control these changes can be followed and used for supervising the manufacturing process; definite information concerning the quality of the starting material and the finished product can be supplied. 1 table, 11 diagrams, and 19 references. E.S.

RESEARCH

BURNETT, LEWIS K. Cooperative research for carton industry development. Tappi 35, no. 8: 56A, 58A (August, 1952).

The author discusses the need for co-operative research in the folding-box industry and the technical organizations which might carry out such a program. E.S.

CORTE, HEINZ. International chemists' meetings in the U.S.A. and Canada in September, 1951. Das Papier 6, no. 11/12: 227-30 (June, 1952). [In German] *cf.* B.I.P.C. 22: 521.

The author gives a brief review of the international chemical conventions at New York, Appleton, and Montreal in the fall of 1951. E.S.

MAASS, OTTO. Factors involved in wood pulp production. Parts I and II. Paper Ind. 34, no. 4: 471-4; no. 5: 605-8 (July, August, 1952).

The author reviews some of the underlying factors involved in the manufacture of pulp from wood, including work carried out under his direction at the Pulp and Paper Research Institute of Canada. The first section deals with natural and forced penetration of liquids and gases into wood,

the influence of chip size, and the distribution of lignin in the cell wall; the second part is concerned with sulfite cooking liquor and its reaction with lignin, the rate of sulfite delignification, periodate lignin, alkaline cooking, and continuous cooking procedures. 1 table and 9 figures. L.E.W.

SRIKANTAN, D. L. Research in the Indian paper industry. Indian Pulp and Paper 6, no. 9: 389-90 (March, 1952).

The author stresses the need for research laboratories in the Indian paper mill and cites several production problems for such units to investigate. 4 references. L.C.

RESEARCH LABORATORIES

ANON. Rebuilt research laboratories. World's Paper Trade Rev. 138, no. 5: 304, 306, 308, 310, 312 (July 31, 1952); Paper-Maker (London) 124, no. 2: 116, 118-20 (August, 1952).

The rebuilt and enlarged laboratories at St. Winifred's, Kenley, Surrey, of the British Paper and Board Industry Research Association were officially opened on July 10, 1952; the buildings had been partly destroyed by fire in November, 1949. In the opening addresses, the organization and history of the association and the scope of the activities of the laboratories were outlined briefly. 4 illustrations in the first, and 2 illustrations and 3 floor plans in the second reference. E.S.

INSTITUT FÜR FORSCHUNG IM GRAPHISCHEN GEWERBE. Opening of the institute for research in the graphic arts. Das Papier 6, no. 15/16: 335-6 (August, 1952). [In German]

A new research center for the study of graphic-arts problems has been opened in Munich. J. Albrecht, who was head of a similar institution in Berlin (destroyed during the war), has been appointed director. 1 illustration. E.S.

ROSIN

HARVA, OLAVI. The conductivity of solutions of hydrogenated rosin soap. Kolloid-Z. 127, no. 2/3: 132-4 (July, 1952). [In German]

The conductivity of purified hydrogenated rosin soap (from Hercules Powder Co. Staybelite Resin No. 48-3619) was determined at 40°C., and the critical concentration for this compound was compared with various other rosin-type materials. The critical concentration of hydrogenated rosin soap (0.010 *M*) was the lowest in the following series of compounds: sodium abietate (0.015 *M*), tall oil rosin soap (0.020 *M*), dehydrogenated rosin soap (0.024 *M*). Therefore, it appears that the critical concentration becomes lower as the number of double bonds in the molecule decreases. This means that the intermolecular attraction between rosin acid anions increases with the hydrogen content of the molecule. It is suggested that these differences in the structure of the molecule are related to other properties of the rosin acids such as lowering of the surface tension, detergency, foaming, and hydrolysis. 2 tables, 2 figures, and 14 references. J.W.S.

SAFETY

ANON. First aid in the woods. Pulp Paper Mag. Can. 53, no. 8: 122, 125 (July, 1952).

First-aid training arouses safety consciousness among workers and actually serves as a means of accident prevention. The value of first aid in

logging camps and the role of the Order of St. John, a volunteer first-aid group, are discussed. 1 illustration. L.C.

WEGENER, ALFRED, and ZWEILING, GÜNTER. Explosion of a chlorine storage tank. Das Papier 6, no. 11/12: 268-9 (June, 1952). [In German]

The explosion—which occurred in March, 1952 in a German mill—concerned an old steam boiler which had been used for storage purposes since 1925. The last inside inspection took place in 1949 and the last water-pressure test was made in 1951. The last (satisfactory) reading of the manometer was taken an hour before the accident occurred. The following investigations showed rather conclusively that fatigue of the material (high brittleness and low resistance to impacts) was responsible for the failure. 3 illustrations. E.S.

SALESMEN AND SALESMANSHIP

LECKIE, ANDREW. Planned selling pays off. Paper Sales 12, no. 8: 12-13, 39 (August, 1952).

A salesman's working record, which lists vital statistics about past purchases made by each customer and gives helpful suggestions for future sales, is described. This planned selling system is a convenience to the forgetful customer as well as the busy salesman. 1 illustration of a record form. L.C.

MOUNT, KEITH. Are you missing a sales market? Am. Paper Merchant 49, no. 8: 20-1 (August, 1952).

Restaurant operators are becoming aware of the market possibilities of "take-home meals" and will need more and varied paper cartons as the field expands. The promising aspects for the papermaker in regard to this new industry are pointed out (*cf.* also: Braun, Clifford H. Idea. Paper Sales 12, no. 8: 15 [August, 1952]). 3 illustrations. L.C.

SETUP BOXES

C. ALBERT SAUTER COMPANY, INC., *Philadelphia.* Taper-Pak . . . a radically different box. Boxboard Containers 70, no. 716: 34-6 (August, 1952).

A new and radically different box—which features the strength and rigidity of a setup paper box and the space-saving advantages of a folding carton—is manufactured by the company under the trade-mark Taper-Pak. Its design is that of a rigid one-piece box with hinged lid and four beveled or tapered box sides; the second feature required the development of a special method of quadstaying. The resulting tray shape permits economical nesting which saves approximately 60% of the storage space. The hinged lid permits faster closing and eliminates time spent in assembling present types of setup boxes or folding cartons. The manufacture and advantages of Taper-Pak boxes are outlined. 5 illustrations. E.S.

SHIPPING CONTAINERS

BOXBOARD CONTAINERS. Production of solid fibre boxes. Boxboard Containers 70, no. 710: 38, 40; no. 711: 42, 44; no. 712: 40, 42; no. 713: 28, 33-4; no. 714: 57-8, 61; no. 715: 33-4, 36, 38 (February-July, 1952).

The manufacturing sequences in the production of solid fiberboard boxes are traced and the problems encountered at various stages are analyzed. The articles, listed in the chronological order of their appearance are as follows: (1) How solid fibre is combined; (2) Special problems of paster operation; (3) From combining to sheet stacking; (4) Adjusting a Swift blanking unit; (5) Producing the blanks; and (6) Stitching and final handling. In the concluding article attention is focused on some of the differences between corrugated and solid fiberboard and on some of the operating problems that distinguish solid-fiber from corrugated-box production in the final stages (*cf.* B.I.P.C. *22*: 524). Illustrations accompany the articles. L.C.

DAY, FREDERICK T. Paper conversion and usage. No. 38. The manufacture and usage of fibreboard packing cases. World's Paper Trade Rev. 138, no. 7: 464, 466, 468 (Aug. 14, 1952).

The manufacture of solid fiberboard and cartons, the printing process, applications, sealing, and railway requirements are described briefly; corrugated boxes are mentioned as a form of fiberboard packing. 3 figures. E.S.

GAYLORD CONTAINER CORPORATION. Gaylord box cuts airborne flower damage. Am. Boxmaker 41, no. 8: 31 (August, 1952).

A sturdy corrugated box, with a center supporting section intended to brace the cover and to hold frozen newspaper as a refrigerant, has been designed for flower transportation. 1 illustration. L.C.

SHIPPING CONTAINERS—MULTIWALL BAGS

DAY, FREDERICK T. Paper conversion and usage. No. 36. Multiwall paper sacks—manufacture and usage. World's Paper Trade Rev. 138, no. 3: 168, 170 (July 17, 1952).

The manufacture, advantages, palletization, and printing of multiwall paper bags are described briefly. 1 illustration. E.S.

SHIPPING CONTAINERS—TESTING

SARGEANT, J. A., and CAMPBELL, R. D. Vibration recorder tests Army packaging. Electronics 25, no. 8: 121-3 (August, 1952).

A shock and vibration recorder is described in which nine accelerometers are attached to significant points of the container to be tested; the fundamental specifications were assembled at the Engineer Research and Development Laboratories, Fort Belvoir, Va., and the instrument was developed and is manufactured by Reed Research Inc., Washington, D.C. It records simultaneously nine accelerations and one set of timing signals on magnetic tape, which is then played back slowly for recording on current-sensitive Teledeltos chart paper. A pulse-width modulation system avoids distortion which may result from inhomogeneities of the tape. Details of the construction are given, including the circuits employed. 2 illustrations and 4 diagrams. E.S.

SLIME PREVENTION

ANON. Paper mill does not worry about slime control—now that automatic chlorination takes over. Chem. Processing 15, no. 8: 48-9 (August, 1952).

A brief description is given of the automatic proportioning chlorinator

and auxiliary equipment made by Fischer & Porter Co., which the Marinette Paper Co. at Marinette, Wis. installed for slime control. The system involves the use of a V/A cell, Rotachlor units, and ratio controllers which maintain a constant preset proportion of chlorine to water; during the summer months a higher chlorine content is maintained than during the cooler seasons. A round-chart recorder in the ratio controller provides a permanent record of both water and chlorine flows. 3 illustrations. E.S.

SOLVENT CLEANING

KUMBLAD, W. S. Controlling pitch and asphalt deposits on pulp and paper mill equipment. Paper Mill News 75, no. 34: 62, 64, 108 (Aug. 23, 1952).

Suitable solvents compounded with surface-active agents and correct methods of application (scraping or wiping with a saturated cloth, scrubbing with a brush, high-pressure sprays, and the use of a water box or sprinkling-can system) to different pieces of machinery used in pulp and papermaking are described. E.S.

SORBITOL

CHEMICAL ENGINEERING. Sorbitol and derivatives. Chem. Eng. 59, no. 8: 208-11 (August, 1952).

A pictured flowsheet of the manufacture of sorbitol by catalytic hydrogenation is presented, and some of its diversified applications, particularly as a glycerin substitute, are mentioned. 1 flowsheet and 10 illustrations. E.S.

STAINS AND STAINING

GIBBON, E. R. Iodine vapour test for pulp and paper. Paper-Maker (London) 124, no. 1: 26-7 (July, 1952).

The author shows that the action of iodine in vapor form on pulp and paper can be of material assistance in pulp and fiber identification and quality evaluation, in the analysis of a furnish, in routine process control, in assessing the nature and effectiveness of size dispersions, and in solving various problems connected with mill processes. The test is quick and simple. A few flakes of iodine are dropped into a tall glass jar which is covered with a flat glass disk cut across the diameter. The halves are held together with a clip, and the pulp or paper strips are suspended through the slit. The jar is placed on a warm oven to generate iodine vapors which react immediately with the strips: 10 seconds of immersion are sufficient. The stains are very different, depending as to whether the strips are dry, moistened with water, or with acid or inorganic salt solutions before immersion. A table is included which shows the different color reactions of various pulps and fibers when moistened with water, hydrochloric acid, or saturated solutions of potassium, zinc, magnesium, or calcium chloride. It is recommended that half the strip be moistened with a solution and that both areas be inspected. Directions are given for analyzing the furnish of a paper, the dispersion of a size, two-sidedness, and paper coatings. The stains fade quickly on exposure to air; they may be preserved by dipping into molten wax or clamping between glass slides. 1 table. E.S.

STARCH

CARROLL, BENJAMIN, and VAN DYKE, JOHN W. The activity of α-amylase as determined by adsorption indicators. Science 116, no. 3007: 168-9 (August 15, 1952).

A method for determining the activity of α-amylase enzyme is suggested which depends upon the change in spectral intensity of a suitable dye when it is adsorbed by the substrate. As the substrate (0.05% Lintner's starch and 3×10^{-5} *M* Congo red dye) is hydrolyzed, the original intensity of the color of the dye is gradually restored. The amylase activity is determined by the reciprocal of the time required to effect a given change in optical density. 1 figure and 5 references. J.W.S.

STATIC ELECTRICITY

EDELSTEIN, SIDNEY M. Static electricity in textiles; a stepchild of modern research. Am. Dyestuff Reptr. 41, no. 17: P518-24 (Aug. 18, 1952); *cf.* B.I.P.C. 22: 526.

The author employs the question-and-answer method to present his views on antistatic agents, a type of textile chemical specialty. He defines and explains static electricity and points out the difficulties it causes in both the manufacture and use of textiles. The new, wholly synthetic hydrophobic fibers aggravate the problem. In the manufacture of textiles, static has been controlled by humidification of mills, by dampening of fibers, by application of hygroscopic substances, by application of electrolytes, such as salts and sulfonated products, by grounding of textiles and machines, and by ionization of air at trouble spots either with radioactive substance or by electrical discharge. The author emphasizes the advantages arising from the application of specially compounded chemical antistatic agents to textiles for the control of static. These not only may continue their effect on the textile until it reaches the consumer and thus contribute to finish, but they also can be so designed as to possess some fastness. 1 table and 1 reference. E.S.

STATISTICAL METHODS

HENDRY, I. F. Statistical quality control; a means of checking variations in a paper made to a standard specification. Paper-Maker (London) 123, no. 6: 496-500, 502, 504 (June, 1952).

The author gives examples to show that statistical quality control provides a means whereby the quality of paper made from a standard furnish and under standard conditions can easily be checked. The control charts which are evolved are easy to follow and have a good sales value. The introduction of a statistical control system was found to be fairly easy with the normal laboratory staff. The results of using control charts were extremely satisfactory, however, only after the charts were made accessible to the paper-machine operators. During the period they have been in use, several defects of the production system have been brought to light; after these were corrected, the system gained considerably in efficiency. With the process under statistical control, accurate predictions can be made from small samples and a large amount of testing eliminated. 3 tables, 7 figures, and 1 reference. E.S.

TRUNDLE, R. C. Don't go 'broke' in paper. Paper Trade J. 135, no. 6: 22-3 (Aug. 8, 1952).

The meaning and application of statistical quality control are discussed; periodic, process, and inherent machine variations are described; and the difference between control sampling and acceptance-rejection sampling is pointed out. The papermaker is urged to study and to record the mechanical limits of each machine and to stay within these limits when setting his standards. L.C.

STEAM POWER

HANRIGHT, R. A .Power from process steam. Pulp Paper Mag. Can. 53, no. 8: 105-7 (July, 1952).

Sample calculations for a kraft mill with a daily capacity of 400 tons of slush pulp are given to show that, for the steam-plant conditions outlined, it would be economical in this mill to generate power from process steam. However, it is emphasized that no two mills have the same characteristics with respect to steam and power usage and that the problems of each mill must be studied individually. 3 tables and 1 figure. E.S.

LANG, MAXIMILIAN. A contribution to the problem of organizing the industrial heat economy. Das Papier 6, no. 13/14: 293-5 (July, 1952). [In German]

The author discusses the reasons why previous appeals for effecting heat and power savings in industry did not bring the desired results, although industry itself should have the greatest interest in a successful solution. He suggests the use of a comparison method, in which the results of all individual processes and stages of a power plant are calculated, thereby yielding an idealized picture of plant conditions. These data, when compared with actual plant performance, would show not only the difference between actual and ideal conditions, but also indicate the sources and magnitude of the individual losses and shortcomings and provide a means for corrections and savings. E.S.

SCOTT, W. C. Merritton Division mills benefit from new steam plant. Pulp Paper Mag. Can. 53, no. 8: 76-7 (July, 1952).

A new Combustion Engineering pulverized-coal unit provides additional capacity at the Lincoln mill of the Alliance Paper Mills at Merritton; this steam plant now takes care of the steam demand of both Lybster and Lincoln mills which are connected with a new steam pipe line. Details of the installations are given. 2 illustrations. E.S.

SPILLING, HEINZ. High-pressure and high-temperature steam plants, vertical high-speed engines. Das Papier 6, no. 13/14: 279-84 (July, 1952). [In German]

The author claims that noncondensing operation (I) in paper mills represents the most economical procedure; the means for covering the entire steam demand by (I) exclusively include an increase in boiler pressure and superheat temperature, a lowering of the backpressure, and the elimination of unnecessary transfer losses through the installation of vertical, high-speed engines (II) for driving individual units and the variable section of the paper machine. The advantages of (II) include small space requirements and the possibility of keeping spare sections on hand in case of a breakdown; when increased steam demands make it necessary, individual units can be readily added. 2 tables and 7 figures. E.S.

WAGNER, HERBERT L. Spreader stokers and flyash reinjection. Paper Trade J. 135, no. 9: 19-24, 26, 28 (Aug. 29, 1952).

The development of the Detroit RotoGrate continuous-cleaning stoker with cinder-return system is outlined by a chronological description of the different installations, two of which concern pulp and paper mills; in the one case, coal and wet bark are burned simultaneously, in the other, coal or oil, or a combination of both fuels. The arrangement of the cinder-return system is quite variable from job to job. The latest development is a classifier and

low-draft-loss collector which removes only the coarse particles (containing the major portion of carbon) entrained in the gas stream and returns them to the furnace. 14 tables and 7 diagrams. E.S.

STEAM TURBINES

ANDERSON, G. W., and COOPER, A. M. Hints on turbine maintenance in paper and pulp mills. Indian Pulp and Paper 6, no. 9: 386-8 (March, 1952).

The power-plant engineer can prevent costly turbine outages by setting up a systematic schedule for inspection, normal cleaning, and minor repairs. He must give careful attention to pressure changes, oil temperature, controls, lubrication, and vibration. L.C.

STRAW

ANON. A camera tour through one of Europe's largest and most up-to-date straw pulp factories. World's Paper Trade Rev. 138, no. 2: 109-12, 117-20 (July 10, 1952).

An illustrated description of the straw pulp mill of The Straw Pulp Manufacturing Co., Ltd. of Radcliffe, Lancs. in England is given. The process employed involves: cutting and cleaning of straw prior to digestion; cooking by the soda process; washing on rotary vacuum filters and caustic recovery; coarse and fine screening, coupled with dirt removal; bleaching (at present single-stage, but later to be a three-stage process); and preparation for shipment (at present in wet-lap form over wet ends; in the future to be over a sheeting machine producing sheeted, baled pulp of 50% moisture content). The mill produces approximately 600 tons of straw pulp per week for the paper industry of a quality which compares favorably with that of wood pulp. 15 illustrations. E.S.

ARONOVOSKY, S. I., ERNST, A. J., SEIDL, R. J., and KINGSBURY, R. M. Straw pulp-wood pulp blends for various types of papers. Tappi 35, no. 8: 351-6 (August, 1952).

Illinois combined wheat straw was pulped by the mechanochemical process, bleached, and blended with Lake States wood pulp to produce typical magazine, book, newsprint, bond, bag, waxing, and greaseproof papers on an experimental Foundrinier paper machine. Control runs were made using wood pulps only. The inclusion of straw pulp in these paper furnishes resulted in improved formation, bursting and tensile strengths, and folding endurance. The tearing resistance of the straw-containing papers was somewhat lower than that of the controls, but the reduction in tear was relatively small. It is evident from these preliminary data that straw pulp could be used to good advantage in improving many types of specialty papers. 2 tables and 6 figures. E.S.

DUCÉ, R., and TABB, C. B. Development in straw and bagasse pulping. Paper-Maker (London) 123, no. 6: 480, 482-4, 486-9 (June, 1952).

Following a brief review of recent installations of either straw- or bagasse-utilizing units in different parts of the world, an outline of the processes employed for the pulping of these agricultural residues is given, including a discussion of the economical factors and the problem of straw collection. Tabular data on the physical properties of papers prepared from straw and bagasse alone or mixed with other pulps are included. 9 tables. E.S.

GIANNI, ENRICO. Straw pulp and paper. Ind. carta (Milan) 6, no. 6: 70-1 (June, 1952). [In Italian]

A general outline of the processes for the manufacture of straw pulp by cooking with lime and the preparation of paper from this pulp is given. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Fibrous Agricultural Residues Committee.* Straw pulping and processing. Tappi 35, no. 8: 133-44A (August, 1952).

The text of the round-table discussion which was held in February, 1952 in New York, is recorded. E.S.

STREAM POLLUTION

RUDOLFS, WILLEM, and NEMEROW, N. L. Rag, rope, and jute wastes from specialty paper mills. V. Treatment by aeration. Sewage Ind. Wastes 24, no. 8: 1005-14 (August, 1952); *cf.* B.I.P.C. 22: 946.

Experiments on the oxidation of rag, rope, and jute cooking liquors and wash-water wastes with flocculent (sludge) and dispersed growths under optimum conditions, and experiments related to the main factors affecting the rate of oxidation, show that aerobic biological methods of treatment of these wastes were effective in reducing their B.O.D. Aeration of mixtures of cooking liquors and the first hour of wash water in the presence of sludge floc appeared to be slightly more effective, but less dependable, than aeration in the presence of dispersed growth for the reduction of B.O.D. The more important factors affecting the rate of oxidation of the wastes are pH, nutrients (nitrogen and phosphorus), seed adaptation, air supply, and temperature. At optimum conditions, the B.O.D. reduction of mixed wastes with a B.O.D. of about 2000 p.p.m. in the presence of dispersed growth was 78 to 96%, and with sludge floc 90 to 98%, depending primarily upon adaptation of seed, after 24-hour aeration. All mixed wastes and the jute cooking liquors could be treated by either type of aeration, whereas rope and rag cooking liquors could not be readily treated because of excessive, voluminous, and stable foam formation. 1 table, 10 figures, and 2 references. E.S.

SULFATE MILLS

ANON. West Virginia. Tappi 35, no. 8: 80A, 82A, 84-7A (August, 1952); Southern Pulp Paper Manuf. 15, no. 8: 46, 48-50, 52 (August, 1952); *cf.* B.I.P.C. 22: 842.

The new streamlined sulfate mill at the Covington plant of the West Virginia Pulp and Paper Co., another phase of the postwar rehabilitation program, has now been completed. The mill is designed to produce chemical pine and hardwood pulp for use in the manufacture of sanitary food containers, kraft envelope, and printing papers. It also makes semichemical pulp from hardwood for corrugating board. Details of the construction and new installations are given; a list of suppliers of the mill and causticizing-plant equipment (including a new lime kiln) is appended. 8 illustrations. E.S.

SULFITE WASTE LIQUOR

ANON. Wood chemicals you can use. Modern Ind. 24, no. 2: 109-10 (August, 1952).

Some of the lignin chemicals which the Marathon Corp. produces from spent sulfite liquor and their possible applications are reviewed. 4 figures. E.S.

G. C. I. Waste economics. Ind. Eng. Chem. 44, no. 8: 17-18A (August, 1952).

The most persistent problem facing the sulfite-pulp industry is the treatment or utilization of its spent liquor; a technology of both has been developed, but neither one is economically satisfactory. Present research on the whole liquor, the sugar fraction, the lignin fraction, and the recovery of pulping chemicals, with particular reference to the work by the Sulphite Pulp Manufacturers' Research League, is reviewed briefly. 1 illustration. E.S.

SCHMIDT, ERWIN. Can the oxygen demand of spent sulfite liquor effluents be measured by permanganate consumption? Das Papier 6, no. 11/12: 222-5 (June, 1952). [In German]

Analytical methods for evaluating stream-pollution characteristics of spent sulfite liquor were studied as part of a German survey started early during World War II. The results of the over-all survey are incomplete but sufficient data are available to demonstrate clearly that methods for determining permanganate consumption (MnO_4^- demand) of spent liquor are not applicable to the evaluation of the pollution characteristics in a stream or other large body of dilution water. The five-day biochemical oxygen demand test ($B.O.D._5$) is much more reliable. Data are presented which permit comparison of the MnO_4^- and $B.O.D._5$ values for various components of softwood (spruçe) and hardwood (beech) spent liquors; they show that the alcoholic fermentation and the production of yeast from spent liquors reduce the stream-pollution potentials of the raw liquors by 60 to 92%, whereas the MnO_4^- demand may not be affected by such treatment. 5 tables and 1 figure. A.J.W.

SULFUR

ANON. Sulphur from hydrogen sulphide. Can. Chem. Processing 36, no. 8: 30, 32 (July, 1952).

An outline of the sulfur recovery process from the sour gas operations in Jumping Pound Field, Alberta is given. The plant commenced operations in February, 1952 and produces approximately 32 long tons of sulfur per day with a conversion efficiency approaching 90%. 1 flowsheet and 2 illustrations. E.S.

NACHTMAN, PAUL. Is the critical world sulphur shortage over? Paper Trade J. 135, no. 7: 30, 32 (Aug. 15, 1952); *cf.* B.I.P.C. 22: 947.

The author does not agree with those who state that the sulfur shortage is virtually ended, but claims that the scarcity will continue until 1955 when it will be alleviated somewhat by the realized production of new plants and processes under consideration at present. However, increased production in the sulfur-using industries will seriously offset these gains, and sulfur will continue to be scarce. Proposed Defense Production Administration conservation measures are discussed. L.C.

SWELLING AND HYDRATION

MOREHEAD, FREDERICK F. A method for studying the effect of humidity on the cross-sectional swelling of some common fibers. Textile Research J. 22, no. 8: 535-9 (August, 1952).

A method and apparatus have been developed which permit the effect of relative humidity on the cross-sectional swelling behavior of textile fibers to be observed under the microscope. The technique has been used on the following fibers: silk, wool, cotton, mercerized cotton, viscose rayon (high, medium, and regular tenacities), viscose rayon staple, viscose rayon staple (resin-treated), cuprammonium rayon, a highly crystalline and highly oriented viscose rayon fiber, Lilienfeld rayon, and cellulose acetate. In addition to the hysteresis "loops," the most striking phenomenon observed was the great increase in swelling between 97% R.H. and wetting in the case of rayons and cotton. 2 tables, 14 figures, and 6 references. E.S.

TALL OIL

TALL OIL ASSOCIATION. Tall oil esters. Tall Oil in Ind. Bull. no. 10: 4 p. (June, 1952); *cf.* B.I.P.C. 22: 285.

A brief review of published information on the methods of esterification of tall oil with monohyric and polyhydric alcohols, mixed esters, monoesters, and ester-testing procedures is presented. 20 references. E.S.

TANNINS

SCOTT, D. S., and GARDNER, J. A. F. Economics of tannin production from sea-water floated western hemlock bark. British Columbia Lumberman 36, no. 4: 51, 116, 118-24 (April, 1952).

A preliminary cost estimate was made to determine the probable production cost of tannin extract from seawater-floated western hemlock bark. Plant designs and cost data were based on the most efficient processing scheme as determined by economic balances. On a conservative basis, the production cost of sulfited, salt-free tannin extract of 5% moisture content was calculated to be 6.0 cents per pound for a plant capable of producing over 2000 tons per year of such extract at full capacity. A corresponding selling price in Eastern Canadian markets was estimated to be 12.4 cents per pound. The reduction in costs achieved by operation on a larger scale or by making less conservative assumptions was also estimated. Plant designs were based on a self-contained processing unit. The extent and nature of pilot-plant investigations necessary to confirm this preliminary estimate and to provide design data are presented. 2 tables and 15 references. E.S.

TURPENTINE

DUSENBURY, M. R., and REESE, JOHN E. Some observations on sulphate turpentine recovery. Tappi 35, no. 8: 365-7 (August, 1952); *cf.* B.I.P.C. 22: 862.

This is the complete text of the article. 2 tables, 3 figures, and 1 reference. E.S.

ULTRACENTRIFUGE

PRATI, GIOVANNI. The sedimentation ultracentrifuge and its possible applications. Ind. carta (Milan) 6, no. 6: 65-9 (June, 1952). [In Italian]

The instrument (manufactured by Phywe, Göttingen, Germany) and applications to the study of the shape of molecules, the average D.P., and the polydispersity of macromolecular substances are described. 1 table, 10 figures, and 8 references. E.S.

UPKEEP PAINTING

HENDERSON, W. W. Mastic insulation and corrosion control.

Paper Mill News 75, no. 34: 90-2 (Aug. 23, 1952); *cf.* B.I.P.C. 22: 286.

Essentially the same information as in the previous article is presented. 4 illustrations. E.S.

VACUUM COATING

DICKINSON, THOMAS A. Vacuum impregnation of converted paper products. Am. Paper Converter 26, no. 8: 14-15, 68 (August, 1952).

The technique of vacuum impregnation and its economic advantages are described, as well as its application to paper products and the required machinery. 4 illustrations. E.S.

VANILLIN

PEARL, IRWIN A., and BEYER, DONALD L. Studies on lignin and related products. VIII. Separation of vanillic and protocatechuic acids by chromatography. Anal. Chem. 24, no. 8: 1366 (August, 1952); *cf.* B.I.P.C. 22: 499-500.

A simple chromatographic procedure for the quantitative separation of vanillic and protocatechuic acids is reported. The procedure is the same as that employed earlier for the separation of vanillin and syringaldehyde (*cf.* B.I.P.C. 21: 500), except that the developer used in the present case is 20 to 1 benzene-ethanol. The acids were separated by this developer on a column of acid-washed Magnesol (which had been left standing overnight in open pans) and located by a ferric chloride streak; this produced a blue-green color with the protocatechuic acid band and a reddish-brown color with the vanillic acid band. 6 references. E.S.

WASTE LIQUOR

EDEN, G. E., JONES, E. E., and WHEATLAND, A. B. Treatment of waste waters from a paper mill by biological filtration. Paper-Maker (London) 123: 4-10, 12-16 (Mid-summer, 1952).

The authors describe the pilot-plant treatment in a percolating filter of the entire effluent of a British mill engaged in the manufacture of special grades from hemp, linen, cotton, and other textiles, and a certain amount of waste paper. The object of the study was the development of a biological method for obtaining an effluent of the highest attainable quality. The wastes of the mill consist of black liquor (I) (spent soda liquor, first washings in the digester, and floor washings from the digester house); strong washings (II) (waste water from the later stages of washing and bleaching); and main waste water (III) (from the final stages of washing, bleaching, and beating, white water from the paper machine, etc.). The results obtained in this study indicate that the entire amount of waste water from this mill could be treated in percolating filters to give an effluent of the desired quality, provided that the pH of the mixed waste water was adjusted, that residual chlorine was removed, and that deficiencies in nitrogen and phosphorus content were replaced by the addition of inorganic compounds of these elements. To treat a daily production of 1,650,000 gal. of (III), 55,000 gal. of (II), and 13,000 gal. of (I), it was estimated that percolating filters containing 11,800 cu. yards of medium would be required, with the necessary sedimentation and humus tanks. If (I) was not treated, the volume of medium needed would be about 4900 cu. yards. Whether black liquor was included in the treatment or not, the cost of chemicals for preliminary treatment and for the addition of nutrient salts would be considerable, particularly

the cost of ferric chloride required to reform a flocculant precipitate when dechlorinated and aerated water had to be pumped to the sedimentation stage of treatment. If pumping could be avoided at this stage, the amount of ferric chloride needed might reduce the cost of chemicals to almost one third of that required otherwise. 10 tables, 7 figures, and 11 references. E.S.

WASTE PAPER

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Empire State Section,* and Canadian Pulp and Paper Association. *Technical Section. Niagara Branch.* Wastepaper panel. Tappi 35, no. 8: 99-105A (August, 1952).

The following brief papers (listed by authors and titles) were included in the discussions of the joint meeting: Weaver, Earle. Wastepaper statistics, p. 99-100A; Stovroff, Haskell. Collecting, grading, and sorting wastepapers, p. 100-1A; Uong, D. D. Nonfibrous materials present in wastepapers and their reactions with caustic soda, p. 101-2A; Hynes, R. W. Processes for the recovery of ledger stock and other wastepaper for use in paper manufacturing, p. 102-3A; Clouse, John L., Sr. Process for the recovery of wastepapers with significant groundwood content, p. 103-5A; and Goodwell, F. C. An application of economics in heat and chemical usage in a deinking operation, p. 105A. E.S.

WATER AND WATER TREATMENT

ANON. How one company solved its stream pollution problem. Can. Chem. Processing 36, no. 8: 38 (July, 1952).

The Don Valley Paper Company in the vicinity of Toronto, Ont. installed a Hardinge automatic backwash rapid sand filter for the treatment of its raw water and the recovery of as much as possible of the internal water, including the white water. The filter has a travelling backwash mechanism which automatically washes one section of the compartmented sand filter bed without affecting the operation of the rest of the filter; its performance has been satisfactory. 2 illustrations. E.S.

ANON. Up-to-date water purification plant at Rutherglen Mill. Paper Making and Paper Selling 71, no. 2: 18-21 (Summer, 1952); *cf.* B.I.P.C. 20: 672.

The same information is presented as in the previous reference. 3 illustrations. E.S.

WET STRENGTH

GALLOWAY, J. R., WALSH, R. H., BURT, J., HICKMAN, J. S., and SHRADER, R. E. A new method for the addition of neoprene latex to paper pulp. Tappi 35, no. 8: 357-60 (August, 1952).

A new continuous method of addition of neoprene latex to pulp has been developed from a study of the conditions which may have caused variations in the results obtained using the beater-addition technique. This procedure consists of mixing the pulp, the latex, and the alum solution in quick succession in a continuous manner at some place in the pulp system on the machine side of the jordan before dilution with tray water. Such a continuous method satisfies the conditions for minimum electrolyte content, maximum fiber area, short contact time, and minimum agitation of the pulp after precipitation of the latex. A series of mill-scale trials is described which indicates that, in all cases, the amount of wet strength obtained by this procedure is greater than that realized by the beater-addition method. In

many cases, 0.5% of neoprene added continuously is as efficient as 2% added at the beater. 4 tables, 5 figures, and 4 references. E.S.

WOOD

BHAT, R. V., and SINGH, MAN MOHAN. Indigenous cellulosic raw materials for the production of pulp, paper and board. Part IV. Writing and printing paper from *Helicteres isora*, Linn. (Maror phal). Indian Forester 77, no. 11: 664-75 (1951); Indian Pulp and Paper 6, no. 12: 507-15 (June, 1952); *cf.* B.I.P.C. 22: 654.

Laboratory experiments on the production of chemical pulps from *Helicteres isora*, Linn. (I) at Dehra Dun are described. (I) is a large shrub which belongs to the order of Sterculiaceae and may attain the size of a tree with thin spreading branches. The wood is light cream in color and soft, and the bark is used for cordage. It grows in many sections of India and Ceylon, also in Java and Northern Australia. Since there is no other use for the wood after the bark has been stripped, it should be available at a low price. The results of the digestions indicate that twigs from (I) yield a well-cooked pulp by either the soda or the sulfate process if crushed before chipping. For the preparation of suitable pulps for either writing or printing papers, the material can be used with or without bark. The pulps are short fibered, so that they should be mixed with about 40% of long-fibered pulps from either sabai grass or bamboo to produce papers of satisfactory strength properties; the utilization of (I) is recommended to Indian paper mills. 6 tables and 6 references; 2 sample sheets in the first reference. E.S.

KRÖNER, KARL, and PUNGS, LEO. The dielectric anisotropy of wood in the high-frequency range. Holzforschung 6, no. 1: 13-16 (1952). [In German; English summary]

The dielectric anisotropy of spruce-, beech-, and oakwood in the ovendry condition was determined by measurement of the dielectric constant in the frequency range 3×10^2 to 10^9 cycles per second. It was found that the anisotropy resulted principally from the macroscopical structure of the wood which represents a composite of cellular substance and air. An anomalous dispersion of the dielectric constant has been determined; the variations of the dispersions caused by different directions of the electric field are also explained by the mixed structure. 2 tables, 3 figures, and 7 references. E.S.

NIETHAMMER, HORST. Wood from West Africa. Das Papier 6, no. 11/12: 255-60 (June, 1952); Allg. Papier-Rundschau no. 13: 588-92 (July 12, 1952). [In German]

The author discusses the possibilities for the utilization of tropical woods in European pulp and paper mills and shows that, from technical as well as economical considerations, the conditions are not favorable. The construction of a pulp mill for the manufacture of a marketable quality of pulp in West Africa, on the other hand, appears technically quite feasible. To put it on an economically sound basis, it will require a large-scale operation with modern machinery and a high initial investment. It will be advisable to construct such a mill as an integrated unit of an existing or new sawmill or veneer plant. 5 illustrations in each and 1 map in the first reference. E.S.

WOOD—CHEMISTRY

CAMPBELL, W. G., and MCDONALD, I. R. C. The chemistry of

the wood cell wall. Part I. The delignification of beech and spruce woods by sodium chlorite in buffered aqueous solution. J. Chem. Soc.: 2644-50 (July, 1952).

In the delignification of European beech (*Fagus sylvatica*) and Sitka spruce (*Picea sitchensis*) by aqueous solutions of sodium chlorite, buffered at pH 6.3, at 50° and 70°C., some 90% of the acid lignin can be removed from each wood without significant loss of polysaccharide, but attempts to delignify the wood residues further cause appreciable loss. Chemical analysis of some partly delignified residues containing 5-90% of the original acid lignin indicated that there was retained in the wood residues a modification of lignin which is not determined by the 72% sulfuric acid method. The total percentage of polysaccharide present in each wood is considerably less than $100 - x$, where x is the acid lignin content of the original wood; therefore, it may be inferred that x does not equal the total native lignin content of the wood. Any determination of holocellulose based on a yield equivalent to the formula $100 - x$ is erroneous because, even though the acid lignin content may be small, there is also present a large proportion of modified lignin. 3 tables and 5 figures. E.S.

WOOD—STRUCTURE

WARDROP, A. B., and DADSWELL, H. E. The cell wall structure of xylem parenchyma. Australian J. Sci. Research B 5, no. 2: 223-36 + 4 plates (May, 1952).

The fine structure of the cell wall of both ray and vertical parenchyma has been investigated. In all species examined, secondary thickening had occurred. In the primary cell wall, the micellar orientation was approximately transverse to the longitudinal cell axis. Optical and x-ray methods revealed that the secondary cell wall possesses a helical micellar organization and that the micelles are inclined between 30 and 60° to the longitudinal cell axis. The distribution of the various cell wall constituents was studied; it was observed that most of the lignin occurred in the intercellular layer and primary wall. The layered structure of the cell wall of sclerosed parenchyma cells was also investigated; it was demonstrated that these cell walls possess both structural and chemical heterogeneity. 2 tables, 25 figures, and 27 references. E.S.

WOOD DISTILLATION

GILLET, ALF., and URLINGS, J. Comparative pyrolyses of wood, cellulose, lignin, and coal. I. Systematic graduated pyrolysis of wood. Chimie & industrie 67, no. 6: 909-19 (June, 1952). [In French]

The pyrolyses were carried out in three different types of ignition tubes, which are described briefly. The samples used were of match-stick size ($2 \times 2 \times 15$ mm. or less), and heating was effected in pure nitrogen. The duration of the pyrolyses varied from one minute to four hours, and the time was carefully clocked; the temperature ranged from 105 to 500°C. The techniques permitted almost instantaneous heating throughout the sample, and heating and cooling were invariably very rapid. The volatile portions were also removed rapidly (in pure nitrogen), and the residues were then analyzed for carbon and hydrogen. These analyses are expressed not only in percentages, but also in terms of atomic ratios. Assuming C_{72} in the wood (dried at 105°, four hours under nitrogen, with rapid cooling), the wood residue (I) was assigned the $C_nH_mO_p$ formula which in this case was $C_{72}H_{109}O_{49.5}$, whereas that of the original wood, dried at 20°, was

$C_{76.4}H_{118.3}O_{65.2}$. From the loss of volatiles at the various temperatures, an attempt was made to obtain a carbon, hydrogen, and oxygen balance; e.g., after heating one hour at 500°, the total loss in weight was 76.5%; the actual percentages of carbon, hydrogen, and oxygen in the residue were, respectively, 84.2, 3, and 12.8% and, based on (I), 21.5, 0.72, and 3.27%. The empirical formula for the residue was $C_{31.6}H_{12.7}O_{3.62}$. The tabulated results are discussed fully. 3 tables, 8 figures, and 8 references. L.E.W.

GILLET, ALF., and URLINGS, J. Comparative pyrolyses of wood, cellulose, lignin, and coal. II. From wood to coal. Chimie & industrie 68, no. 1: 55-60 (July, 1952). [In French]

Using distillation techniques similar to those described in the preceding article, native lignin, ethanol lignin, and cotton cellulose were subjected to pyrolysis for one hour under nitrogen at temperatures ranging up to 550°C. in the case of lignin and 505° in the case of cellulose. The authors have made analyses and have tabulated data much as in their previous communication. At 450° (or above), the conclusions are that cellulose is converted into a residue resembling that obtained from lignin. Above 365°, the hemicelluloses appear to be converted into volatile products (although no isolated hemicelluloses were actually pyrolyzed). Wood charcoal was very similar in composition to the lignin pyrolysis residue, but the over-all loss in weight more nearly approached that suffered by destructively distilled cellulose. An attempt has been made to show the differences between coal formed in geologic time and charcoal formed from wood. Coal formation leads to far more complete oxygen removal than does heating under nitrogen. The polemics extending over 50 years as to whether coal emanates from lignin and/or cellulose are mentioned. An effort is made to "extrapolate the results back to the wood" in considering coal formation in nature. 2 tables, 3 graphs, and 1 reference. L.E.W.

WOOD OPERATIONS

BENNETT, W. D. Nature and equipment of pulpwood operations in Canada. Pulp and Paper Manual of Canada 20: 61, 63-5, 67, 69, 71 (1952).

A list of commodities, supplies, and equipment used on pulpwood operations is presented; there are many fringe items which are not yet common in woods camps but which are yearly coming more and more into the picture. Woods operations provide a very substantial market which can still be increased considerably. 11 tables and 20 footnotes. E.S.

CARR, GEORGE J. Tree length logging of pulpwood. Paper Trade J. 135, no. 5: 22, 24-8; no. 6: 26-8 (Aug. 1, 8, 1952).

The author discusses the causes for the development of short-length pulpwood handling and lists the changed conditions which make mechanical long-length handling advantageous. Trucks for the transportation of wood to the mill and methods and equipment (rubber-tired and crawler tractors, winches, log carts and arches, and pallets) for tree-length skidding and for loading the trucks on the road out of the rough stumpage are described. The advantages of tree-length handling from the standpoint of the mill stock pile are also noted. 16 illustrations. L.C.

WOOD WASTE

RAO, T. V. SUBBA, and DESIKACHAR, N. Utilisation of wood waste. Indian Print and Paper 6, no. 11: 467-70; no. 12: 503-6 (May, June, 1952).

The efforts for the economic utilization of wood waste, including lignin, in the United States are reviewed, and the success of the different procedures is discussed. 23 references. E.S.

ROHM & HAAS COMPANY. Chair backs from wood chips. Rohm & Haas Reptr. 10, no. 3: 7-11 (May-June, 1952).

The process of manufacturing Trimwood panels from veneer scrap, other waste from woodworking operations, and Uformite 400 (urea-formaldehyde resin) by Swain Industries, Inc. is described. The pressed and cured slabs are used at present principally for chair seats and backs; however, the basic process can readily be adapted to the manufacture of many other products. 5 illustrations. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets, or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ADHESIVES

CASEBOLT, GEORGE S. Adhesive composition and process of preparing the same. U. S. patent 2,592,510. Filed July 21, 1950. Issued April 8, 1952. 19 claims. Assigned to American Cyanamid Company. [Cl. 260-29.4]

The adhesive consists of 250 parts of a urea-formaldehyde resin (viscosity from 40 to 70 centipoises and pH of 7.8 to 8) containing 56% solids and 85 parts of an aqueous emulsion of polyvinyl acetate containing 55% solids; various other mixtures can be employed. It is desirable to add an acidic material which functions as a curing catalyst to accelerate the cure and thus give quicker bonding at room temperature. The composition has a marked degree of water and heat resistance, and is a substitute for glue in the preparation of plywood and in the manufacture of paper products (bags, containers, corrugated material, and the like). C.J.W.

MAYFIELD, EVART E. Adhesive comprising Vinsol and a butadiene-acrylonitrile synthetic rubber. U. S. patent 2,606,884. Filed April 27, 1950. Issued Aug. 12, 1952. 11 claims. Assigned to Hercules Powder Company. [Cl. 260-27]

An adhesive which can be used for laminating paper, cellophane, wood, cloth, rubber, or metals contains a substantially petroleum hydrocarbon resinous extract of pinewood (Vinsol) and a substantially completely polymerized butadiene-acrylonitrile copolymer in the ratio of from 1 : 3 to 3 : 2. C.J.W.

YOUNG, ARTHUR E., STILBERT, ELMER K., and LALK, ROBERT H. Adhesive composition comprising a vinylidene chloride-acrylonitrile copolymer latex and a protein. U. S. patent 2,593,236. Filed March 22, 1950. Issued April 15, 1952. 7 claims. Assigned to The Dow Chemical Company. [Cl. 260-8]

A latex is formed by polymerizing a mixture of 68 parts of vinylidene chloride, 12 parts of acrylonitrile, and 15 parts of dibutyl phthalate or other plasticizer. This latex is mixed with a solution of casein, soybean protein,

or hide glue to form an adhesive which is useful in holding together cut sheets of paper (especially those which are hard surfaced) in bookbinding (e.g., in the preparation of telephone directories where no sewing or staples are employed). C.J.W.

ALKALINE PROCESSES—FURNACES

HAMM, ALEXANDER L. Chemical recovery furnace with high-temperature superheater. U. S. patent 2,606,103. Filed June 13, 1947. Issued Aug. 5, 1952. 5 claims. Assigned to Combustion Engineering-Superheater, Inc. [Cl. 23-262]

The invention provides means for obtaining relatively high steam temperatures in superheaters associated with chemical recovery furnaces. Methods are also provided for controlling the temperature of the steam leaving these superheaters and for equalizing the temperature of the products of combustion leaving the recovery furnace across the entire cross-sectional area of the flow of such products. The necessary apparatus is illustrated. 2 figures. C.J.W.

BARK

ANWAY, HERMAN W. Method of treating bark. Canadian patent 485,781. Filed Dec. 9, 1946. Issued Aug. 12, 1952. 9 claims. Assigned to Weyerhaeuser Timber Company.

This corresponds to U. S. patent 2,437,672 (March 16, 1948); *cf.* B.I.P.C. 18: 640. 1 diagram. C.J.W.

BARKERS AND BARKING

GUETTLER, HERBERT W. Hydraulic log barker with traveling jet and automatic and manual controls. U. S. patent 2,605,794. Filed March 26, 1949. Issued Aug. 5, 1952. 10 claims. [Cl. 144-208]

The over-all width of the barker is only slightly greater than the maximum length of the logs to be barked; the barking operation is effected by a nozzle head which is stationary lengthwise of the log. A high-pressure water jet is projected against the log while the latter is rotated. The nozzle head comprises a plurality of nozzles, each having a jet opening for projecting a high-pressure water jet against the logs; water under appropriate pressure can be admitted to the nozzles selectively or simultaneously, as desired. 7 figures. C.J.W.

BOARD, ASBESTOS

BOLLAERT, EDGARD M. Asbestos-cement building materials and method of making same. Canadian patent 485,082. Filed Jan. 31, 1947. Issued July 22, 1952. 1 claim. Assigned to Canadian Gypsum Company Limited.

This corresponds to U. S. patent 2,573,659 (Oct. 30, 1951); *cf.* B.I.P.C. 22: 292. C.J.W.

BOARD, BUILDING

MUELLER, MARGARET E. Insulation board. U. S. patent 2,608,492. Filed Dec. 19, 1944. Issued Aug. 26, 1952. 5 claims. [Cl. 106-163; changed to 92-3]

Hemp or flax shives from unretted plants are reduced in a beater at 125 to 150°F. to the condition of a half stock, the pulp is spread onto a screen, heated to a temperature of 150 to 200° while subjected to a pressure of 100

to 200 p.s.i., and finally dried at 200 to 250°F. The resulting board can be used as a wallboard, for interior woodwork, or as heat insulation in a building or a refrigerator. C.J.W.

BOARD SPECIALTIES

FORRER, HOMER W. Compartmental folded paperboard carrier with handle. U. S. patent 2,606,711. Filed Sept. 15, 1950. Issued Aug. 12, 1952. 6 claims. Assigned to Atlanta Paper Company. [Cl. 229-27]

The carrier is designed for the use of small jars and cans. It has a medial partition which defines two compartments and provides a central panel from which the carrier may be suspended for carrying. 7 figures. C.J.W.

FRASE, RAYMOND E. Pallet for handling and shipping merchandise. Canadian patent 485,397. Filed March 6, 1950. Issued Aug. 5, 1952. 4 claims. Assigned to Addison-Semmes Corporation.

This is an improvement on the patent of Donahue (*cf.* B.I.P.C. 19: 69); the supporting unit for a pallet consists of a plurality of paper board posts and paper board connecting strips of approximately the same width as the posts, adhesively secured to the upper and lower ends thereof. Each of the upper connecting strips is adapted to be secured to the under face of the pallet. 4 figures. C.J.W.

HEINLE, CARL W. Method of winding composite tubular articles. U. S. patent 2,604,830. Filed June 11, 1948. Issued July 29, 1952. 5 claims. Assigned to American Can Company. [Cl. 93-94]

In the manufacture of spirally wound multi-ply composite tubes having an inner ply of metal foil, a lubricant, consisting of monohydric alcohols containing two to five carbon atoms or of hydrocarbons boiling from 80 to 150°C., is applied to the surface of the inner ply facing the mandrel to reduce the friction between the metal foil and the mandrel. C.J.W.

KNUDSON, VERNIS G. Display container. U. S. patent 2,606,653. Filed Jan. 20, 1951. Issued Aug. 12, 1952. 4 claims. Assigned to Treasure Masters Corporation. [Cl. 206-44.12]

The container is designed for the display of stacked greeting cards and envelopes and permits their removal when the containers are packed in a larger container on end-to-end relationship. 6 figures. C.J.W.

KOWAL, MICHAEL H. Bottle carrier. U. S. patent 2,606,712. Filed March 24, 1949. Issued Aug. 12, 1952. 1 claim. Assigned to Empire Box Corporation. [Cl. 229-28]

The bottle carrier is so constructed that the two rows of bottles are effectually separated by a solid central partition which also serves as a connector for a separate handle. 10 figures. C.J.W.

WILLIAMSON, MARSHALL I. Carrier for bottles and cans. U. S. patent 2,605,034. Filed Aug. 3, 1950. Issued July 29, 1952. 6 claims. Assigned to National Folding Box Company. [Cl. 224-48]

A bottle carrier is equipped with a paperboard strap handle. 12 figures. C.J.W.

WILLIAMSON, MARSHALL I. Carrier for bottles and cans. U. S.

patent 2,605,035. Filed Aug. 3, 1950. Issued July 29, 1952. 3 claims. Assigned to National Folding Box Company. [Cl. 224-48]

The method of engagement of a paperboard strap handle to a bottle carrier is claimed. 9 figures. C.J.W.

WILLIAMSON, MARSHALL I. Hollow-walled box. U. S. patents 2,605,953 and 2,605,954. Filed June 19, 1951. Issued Aug. 5, 1952. 7 and 6 claims. [Cl. 229-34]

This relates to an improvement in the basic corner construction of a container as claimed in U. S. patent 2,522,325 (*cf.* B.I.P.C. 21 : 127). The invention provides wall constructions covering a considerable range of angles for the inside and the outside wall panels and also permits the box blanks to be prefolded and preglued to facilitate the assembly of the box. 6 and 7 figures, respectively. C.J.W.

BONDED FIBER WEBS

SCHRODER, GEORGE, and SEYMOUR, RAYMOND B. Coated nonwoven fabric and process of making the same. Canadian patent 485,111. Filed Nov. 15, 1947. Issued July 22, 1952. 5 claims. Assigned to Henry H. Frede & Company, Inc.

A nonwoven fabric to be used for disposable diapers and sheets is coated with a mixture consisting of 40 to 65 parts by weight of a solid polyethylene glycol (molecular weight of 1000 to 7000) and 35 to 60 parts by weight of a styrene-maleic anhydride polymer. The coatings have a thickness corresponding to 0.25 to 2 pounds per 1000 square feet. The treated material is dried at a temperature of 250 to 450°F. on drum rollers. C.J.W.

SEYMOUR, RAYMOND B., and SCHRODER, GEORGE M. Absorbent fibrous sheets and method of making same. Canadian patent 485,112. Filed May 6, 1949. Issued July 22, 1952. 8 claims. Assigned to Henry H. Frede & Company, Inc.

A moisture-absorbent article suitable for toweling and like material comprises a sheet of unwoven fibers having a random distribution and a coating of sodium carboxymethylcellulose or like material which is present as a dry, water-insoluble solid adhering to the fibers; the sodium salt is rendered insoluble by heating it at 300 to 450°F. The content of the sodium salt is from 0.25 to 0.4 pound per 1000 square feet. C.J.W.

CELLULOSE ETHERS

RIGBY, CHARLES H. Production of powdery products comprising carboxymethyl cellulose. U. S. patent 2,607,772. Filed Dec. 5, 1950. Issued Aug. 19, 1952. 2 claims. Assigned to Imperial Chemical Industries Limited. [Cl. 260-232]

Chips (suitable for sulfite pulp) (90 parts), 45 parts of sodium hydroxide, 50 parts of industrial ethyl alcohol containing 7% water, and 37 parts of water are shredded and aged in a Werner-Pfleiderer-type incorporator; 50 parts of industrial alcohol and 38 parts of chloroacetic acid are added, mixing is continued for an hour, the temperature is raised to 60°C. and maintained for two hours, the mixture is then cooled to 30-35°, treated with 28 parts of sodium bicarbonate, and then sprayed with a mist of 28 parts of water; the resulting product is dried in thin layers at 60-100° and mechanically disintegrated. The material is a fine powder, 94% of which will pass a

100-mesh screen. In another method the crude carboxymethylcellulose is stirred into industrial alcohol, the excess alkali is neutralized with 50% nitric acid, and the neutral slurry is centrifuged. C.J.W.

CHLORINE DIOXIDE

WAGNER, ERNST. Process for the preparation of chlorine dioxide. U. S. patent 2,605,168. Filed June 6, 1949. Issued July 29, 1952. 5 claims. Assigned to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. [Cl. 23-152]

A mixture of 500 grams of commercial sodium chlorate, 125 grams of cellulose pitch, and 665 cc. of water is withdrawn from a storage tank at the rate of 370 cc. per hour and treated with 120 liters of air per hour. The reaction liquor at about 90 to 92°C. is passed into a vessel through which is blown 85 liters of air per hour and into which is introduced 350 grams of sulfuric acid per hour; the effluent is free of sodium chlorate, indicating 100% conversion to chlorine dioxide. 1 diagram. C.J.W.

COLORIMETRY

BARNES, NORMAN F. Color matching apparatus. U. S. patent 2,602,368. Filed Sept. 13, 1950. Issued July 8, 1952. 6 claims. Assigned to General Electric Company. [Cl. 88-14]

An apparatus is described for matching colors through the medium of their spectrophotometric curves. 3 figures. C.J.W.

CONTINUOUS COOKING PROCESS

WEISS, CLARENCE B., and DEAN, CHARLES W. Apparatus and method for processing vegetable fibers. U. S. patent 2,607,680. Filed Feb. 17, 1947. Issued Aug. 19, 1952. 2 claims. Assigned to Buckeye Cotton Oil Company. [Cl. 92-7]

In the alkaline treatment of cotton linters for the preparation of cellulose, a liquid suspension of the fibers is caused to flow continuously through a closed system including two or more treatment zones in which elevated pressures and temperatures can be maintained, the alkaline liquor flowing with the fibers in each zone and being expressed from the fibers on discharge from each zone and reused in a preceding treatment zone. The initial concentration of alkali is about 2.5% and the ratio of liquor to linters is from 2.4 to 3.2 to 1. The steam pressure in each zone is 100 p.s.i. The time of treatment, using three zones, is four, four, and 30 minutes. The viscosity of the resulting cellulose is about 3000 seconds. 2 figures. C.J.W.

WEISS, CLARENCE B., and DEAN, CHARLES W. Apparatus for removing liquid from cotton linters. U. S. patent 2,607,679. Filed Feb. 17, 1947. Issued Aug. 19, 1952. 3 claims. Assigned to Buckeye Cotton Oil Company. [Cl. 92-7; changed to 100-98]

The invention covers an apparatus capable of delivering fibrous material to a high-pressure zone or of discharging such material from a high-pressure zone in a continuous manner and without impairment of the pressure. It is designed for use in the alkaline pulping of cotton linters (see preceding abstract). 6 figures. C.J.W.

DE-INKING

SCHEID, LOUIS J. Method of deinking waste paper. U. S. patent

2,607,678. Filed Aug. 5, 1947. Issued Aug. 19, 1952. 5 claims. Assigned to Watervliet Paper Company. [Cl. 92-1.5]

Waste paper containing a saponifiable oil-base ink (75 pounds) is treated with two pounds of sodium hydroxide in 650 pounds of water at 190°F.; the saponified product is treated with four pounds of an organic solvent (kerosene, gasoline, or carbon tetrachloride) and one pound of soybean flour, the mixture is agitated until the oily mass is emulsified, and the pulp is washed to free it of the emulsified oily mass. C.J.W.

DIGESTERS

LEWIS, ROBERT G. Continuous pulp digester. U. S. patent 2,606,114. Filed Nov. 1, 1946. Issued Aug. 5, 1952. 7 claims. One half assigned to Sidney D. Wells. [Cl. 92-7]

The digester is designed to be employed with the continuous pulping method for agricultural residues (cornstalks, straws, bamboo, bagasse, and the like) by the method of Wells as disclosed in U. S. patent 2,029,973 (Feb. 4, 1936). The apparatus consists of at least two digesters and a heat exchanger. The pulp passes consecutively through the digesters and the heat exchanger. Steam is passed countercurrent to the flow of the material being pulped. White liquor is passed through the heat exchanger in a direction countercurrent to the flow of stock. The design of the digesters is described. 3 figures. C.J.W.

DISPENSING CONTAINERS

BUCHAN, JAMES. Powder distributing drums. Canadian patent 485,347. Filed Aug. 5, 1947. Issued July 22, 1952. 8 claims. Assigned (two thirds) to John A. King and John Laird & Son Limited.

A powder distributor comprises a tubular body portion and a closing cap with one or more perforations. The body has at the base a bellows arrangement for ejecting the powder. 2 figures. C.J.W.

ROSEN, SHY. Commodity dispensing package and wrapper therefor. U. S. patent 2,606,655. Filed Oct. 30, 1947. Issued Aug. 12, 1952. 2 claims. Assigned to Milprint, Inc. [Cl. 206-57]

A container is designed for the dispensing of sanitary napkins and other tissues from a pocket-size pack. 7 figures. C.J.W.

WABER, DONALD, and BRAUNSTEIN, RAYMOND, JR. Dispensing container. U. S. patent 2,605,892. Filed July 6, 1951. Issued Aug. 5, 1952. 9 claims. [Cl. 206-42]

The container has a substantially central exit, relative to the sides of the container and at the bottom of the latter, and a gradually diminishing guideway leading to the exit. 7 figures. C.J.W.

WELLS, WILLIAM J. Article dispensing paper carton. U. S. patent 2,605,038. Filed Feb. 14, 1948. Issued July 29, 1952. 7 claims. Assigned to F. N. Burt Company, Inc. 7 claims. [Cl. 229-17]

A dispensing carton for gum, candy, medicated tablets, and the like has the closure flap near one end of the container; the flap is held in its initial position by a short integral tie which is readily severed by external pressure; there is also a supporting arrangement for the flap when reclosed. 8 figures. C.J.W.

FOLDING BOXES

BENCICH, JOHN S. Protective container for pies and cakes. U. S. patent 2,606,651. Filed March 29, 1948. Issued Aug. 12, 1952. 1 claim. [Cl. 206-4]

The container consists of substantially complemental sections with locking means. 4 figures. C.J.W.

BURGER, MARTIN. Carton. U. S. patent 2,605,951. Filed Aug. 24, 1946. Issued Aug. 5, 1952. 4 claims. Assigned to Shellmar Products Corporation. [Cl. 229-28]

A cellular egg carton is formed of one blank in such manner that it can be assembled without an adhesive. 7 figures. C.J.W.

BUTTERY, KENNETH T. Collapsible cellular carton. U. S. patent 2,605,952. Filed Jan. 22, 1947. Issued Aug. 5, 1952. 1 claim. Assigned to Sutherland Paper Company. [Cl. 229-28]

In an egg carton formed from an integral blank, the end walls are so designed that they are not easily disengaged. 5 figures. C.J.W.

FRANKENSTEIN, WILLIAM P. Hollow wall carton formed of two blanks. U. S. patent 2,605,894. Filed Jan. 8, 1946. Issued Aug. 5, 1952. 13 claims. [Cl. 206-45.22]

The container, of the break-back lid, knocked-down type, is provided with hollow or double walls in which the wall members are spaced from one another; three sides and the lid are formed of one blank and the remaining wall is formed of a second blank. The lid acts as an easel for display purposes. 14 figures. C.J.W.

MACARTHUR, JOHN E., JR. Carton reclosure. Canadian patent 485,462. Filed Jan. 24, 1950. Issued Aug. 5, 1952. 8 claims. Assigned to General Motors Corporation.

A carton has a four-flap closure; the two outer flaps are glued and a perforated line permits severing the glued flaps to open the carton; other flaps with tongues extend between the several portions of the glued flaps to lock the carton on reclosure. 5 figures. C.J.W.

MELLER, REGINALD B. Self-locking folding box. U. S. patent 2,605,955. Filed Dec. 26, 1947. Issued Aug. 5, 1952. 6 claims. Assigned to Bemiss-Jason Company. [Cl. 229-35]

The invention provides an improved interlock for rigidly connecting overlapping portions of a blank of foldable sheet material. This is formed from and by the stock of the sheet material and may be brought into interengaging position either by hand or by automatic high-speed box machinery. 5 figures. C.J.W.

REAVES, JULES M. Partitioned container. U. S. patent 2,606,710. Filed June 21, 1948. Issued Aug. 12, 1952. 4 claims. Assigned (50%) to Heiskell Weatherford, Jr. [Cl. 229-27]

The construction of a container for butter and oleomargarine is claimed; it is capable of receiving and retaining partitions or dividers. 8 figures. C.J.W.

WELSHENBACH, CHARLES D. Handle for suitcase type containers. U. S. patent 2,605,041. Filed June 19, 1948. Issued July 29, 1952. 4 claims. Issued to The Hinde & Dauch Paper Company. [Cl. 229-54; changed to 229-52]

The handle is formed of a folded strip of paper which is interlocked to the top wall member. 6 figures. C.J.W.

INTERIOR PACKING

DELINE, IRVING A. Inner compartment for candy boxes. U. S. patent 2,605,039. Filed Aug. 20, 1949. Issued July 29, 1952. 1 claim. [Cl. 229-42]

An inner subbox is provided for a candy box which divides it into a plurality of compartments. 3 figures. C.J.W.

KOLODNY, SAMUEL. Glass syringe packaging carton. U. S. patent 2,604,987. Filed April 12, 1950. Issued July 29, 1952. 2 claims. Assigned to East Rutherford Syringes, Inc. [Cl. 206-63.2]

The patent covers inserts for containers used in shipping glass syringes. 5 figures. C.J.W.

MACHINERY—CENTRIFUGAL SCREENS

VICKERY, FREDERICK W. Vortex separators for paper pulp. Canadian patent 485,342. Filed Aug. 5, 1949. Issued July 29, 1952. 12 claims. Assigned to Vickerys Limited.

This corresponds to U. S. patent 2,521,103 (Sept. 5, 1950); *cf.* B.I.P.C. 21: 133-4. 15 figures. C.J.W.

MACHINERY—CONVERTING MACHINERY

HEYWOOD, VINCENT E. Drier mechanism for envelope machines. U. S. patent 2,604,829. Filed April 17, 1948. Issued July 29, 1952. 12 claims. Assigned to United States Envelope Company [Cl. 93-74].

The drying mechanism is employed in conjunction with an envelope machine and is designed to dry the gummed portions of the seal flap before the envelopes are stacked together. The improvement resides in the conveyor mechanism. 8 figures. C.J.W.

HICKIN, ROBERT J., and STEELE, GERALD H. Carton erecting machine. U. S. patent 2,604,827. Filed April 17, 1950. Issued July 29, 1952. 3 claims. Assigned to The Ohio Boxboard Company. [Cl. 93-51]

The apparatus includes fixed die means and a reciprocable plunger cooperating with the die, together with means for feeding carton blanks into position over the die and, usually, means for removing the setup cartons. The apparatus is designed particularly for cartons of the corner-lock tray type. 10 figures. C.J.W.

KINGSLEY, DAVID G. Box-part making machine. Canadian patent 485,508. Filed Dec. 19, 1950. Issued Aug. 5, 1952. 19 claims. Assigned to Stapling Machines Co.

A stapling mechanism is claimed which is adapted to staple box parts so arranged that irregular stapling operations are required. 32 figures. C.J.W.

MCLAUGHLIN, CLINTON G. Closure machine for cartons. Canadian patent 485,010. Filed Aug. 22, 1949. Issued July 22, 1952. 3 claims.

The machine is adapted for closing the upper part of double-lidded egg cartons. 11 figures. C.J.W.

PALMER, FRANK D. Apparatus for making packages. U. S. patent 2,604,826. Filed May 31, 1944. Issued July 29, 1952. 11 claims. Assigned to Package Machinery Company. [Cl. 93-39.2]

A machine is described for manufacturing a container comprising a main tubular body part, a bottom closure, and a top closure provided with a pouring-spout arrangement which may be repeatedly opened and closed; this container is suitable for salt, sugar, spices, and like materials. The machine includes a mechanism for receiving a stack of prefabricated collapsed tubular container bodies, together with means for feeding such bodies and opening or distending them. It also provides means for applying and adhesively uniting the covers to the container body. 65 figures. C.J.W.

SIEG, KARL. Box blank taping machine. U. S. patent 2,604,825. Filed April 7, 1948. Issued July 29, 1952. 6 claims. Assigned to Samuel M. Langston Co. [93-36.9]

In a mechanism for applying an adhesive tape to a box blank formed of double-faced, corrugated paperboard, the tape is kept under substantially uniform light tension both while at rest and while being applied. A loop of tape is maintained under tension and, as a portion of the tape forming the loop is used up, the loop shortens but, during the interval between successive tape-applying operations, it is extended to its full length. Thus, when the tape first starts moving at the speed of the blank, it is drawn from the loop rather than directly from the supply roll. 8 figures. C.J.W.

WELSH, ORME, and NOREEN, ELMER D. Prebreaking mechanism for carton blanks. U. S. patent 2,605,679. Filed July 9, 1949. Issued Aug. 5, 1952. 7 claims. Assigned to The Sperry Corporation. [Cl. 93-37]

The mechanism is designed for preliminarily breaking of cartons or cardboard or similar material along lines on which they are to be subsequently folded in order to facilitate the subsequent folding operation. An illustration is the separator wall members in the cells of certain types of egg cartons. The design is such that it is capable of operating on various sized blanks and operates during the continuous movement of the blank. 14 figures. C.J.W.

MACHINERY—CORRUGATING MACHINE

APGAR, CHARLES W. Fan-folded stack of corrugated board for tubular containers. U. S. patent 2,604,984. Filed March 18, 1949. Issued July 29, 1952. 1 claim. Assigned to Seaboard Container Corporation. [Cl. 206-46]

A method is described for the manufacture of corrugated paperboard in continuous strip form for use in the production of tubular containers and the arrangement in fan-folded bundles for shipment; the material can be used for the production of containers of different lengths. 7 figures. C.J.W.

MACHINERY—GRINDERS

ROBERTS, FREDERICK W. Wood grinding machines. Canadian

patent 485,354. Filed July 9, 1947. Issued July 29, 1952. 5 claims. Assigned to Charles B. Roberts, trustee.

This corresponds to U. S. patent 2,406,904 (Sept. 3, 1946). A method is provided for the disposal of the shims or remnants of logs after they have passed through the space between the feed ring and the grindstone. 3 figures. C.J.W.

MACHINERY—JORDANS

WELLS, HAROLD D. High speed hydrabrushing jordans. Canadian patent 485,228. Filed Dec. 6, 1950. Issued July 29, 1952. 6 claims.

This corresponds to U. S. patent 2,544,971 (March 13, 1951); *cf.* B.I.P.C. 21: 597. 9 figures. C.J.W.

MACHINERY—LAY BOYS

MORRISON, HUGH S. Sheet conveying, stacking, and delivering apparatus. U. S. patent 2,606,669. Filed April 14, 1950. Issued Aug. 12, 1952. 12 claims. Assigned to Fairfield Paper and Container Company. [Cl. 214-6]

This is a continuation of U. S. patent 2,506,550 (*cf.* B.I.P.C. 20: 760). The present invention provides an improved gate structure which prevents jamming of the sheets and a controlling means which more positively and more quickly actuates the gate at the proper intervals. 11 figures. C.J.W.

MACHINERY—PASTING MACHINE

TAYLOR, EDGAR F., and WILLIAMS, ALBERT H. Machine for applying adhesive to paper and the like. U. S. patent 2,605,740. Filed Dec. 22, 1948. Issued Aug. 5, 1952. 5 claims. [Cl. 118-236]

The apparatus consists of gripping devices which feed a sheet of paper from a stack to a roller coated with adhesive and means for peeling the paper from the roller and guiding it to a traveling belt or the like. 6 figures. C.J.W.

WRAY, WILLIAM E. Adhesive applying apparatus for cigarette making machines. U. S. patent 2,606,521. Filed March 10, 1950. Issued Aug. 12, 1952. 2 claims. Assigned to American Tobacco Company. [Cl. 118-410]

An apparatus is described which is capable of continuous feed of paste at high speed to the edge of cigarette paper. Removal of air bubbles from the paste is important. 5 figures. C.J.W.

MACHINERY—WEB-TENSION CONTROL

LESSMANN, GERHARD P. Tension control system. U. S. patent 2,605,101. Filed Oct. 19, 1945. Issued July 29, 1952. 8 claims. Assigned to Westinghouse Electric Corporation. [Cl. 271-2.3]

A method is described for so connecting a mechanical pressure type of resistance regulator to a tensiometer-roll shaft that excessive movement of the tensiometer shaft cannot damage the relatively delicate regulator. 4 figures. C.J.W.

MATERIALS HANDLING

JEFFREY, DOUGLAS C. Apparatus for stacking wallboard panels and the like. U. S. patent 2,607,501. Filed June 25, 1947. Issued Aug. 19, 1952. 13 claims. Assigned to National Gypsum Company. [Cl. 214-6]

The apparatus receives a continuously moving line of wallboard bundles and automatically stacks them on a transportable supporting structure into a plurality of contiguous columns. 19 figures. C.J.W.

MOLDED PULP ARTICLES

LENZ, FRANK B. Method of making acoustic diaphragms. U. S. patent 2,605,855. Filed Dec. 22, 1948. Issued Aug. 5, 1952. 6 claims. Assigned to Hawley Products Company. [Cl. 181-32; changed to 18-56]

A molded pulp diaphragm is formed in the usual manner with a corrugation between the border and the vibratile portion; it is then dampened (in a humidifying atmosphere) and subjected to a pressure molding operation in which the previously formed corrugation is reformed between embossing dies. This has a marked lowering effect on the natural resonance of the disphragm. 4 figures. C.J.W.

PACKAGING

HULTIN, OSCAR H. Method of making packages. U. S. patent 2,606,411. Filed May 28, 1947. Issued Aug. 12, 1952. 1 claim. Assigned to Pneumatic Scale Corporation. [Cl. 53-8]

A method is claimed for the manufacture of a rectangular bag of parchment paper, cellophane, or other transparent paper which is protected by a sleeve of containerboard or the like. 9 figures. C.J.W.

PAPER—COATED

HOEL, LEROY W. Paper-coating machine. U. S. patent 2,606,520. Filed March 12, 1949. Issued Aug. 12, 1952. 4 claims. Assigned to Paper Patents Company. [Cl. 118-249]

The invention is designed to eliminate so-called "chatter marks" (waves, ridges, or cross bars of improperly distributed coating material) from coated papers, particularly those having heavy coatings. The apparatus consists of a top roll, a main applicator roll, a floating valve roll, and an outer roll. The floating valve roll engages the outer roll to form a primary valve nip and also the applicator roll to form a secondary transfer nip. The axes of the rolls are so located that substantially all the force applied by the outer roll to the primary nip is transmitted through the floating roll to the secondary nip. 1 figure. C.J.W.

PINTELL, MILTON H. Flexible web coated with an ethyl cellulose composition. U. S. patent 2,605,328. Filed April 14, 1949. Issued July 29, 1952. 1 claim. [Cl. 117-122]

A coating for labels contains 5.2% *o*-terphenyl and 17.5% ethylcellulose, the remainder of the composition being a solvent (acetone and isopropyl alcohol, hexane and ethyl alcohol, and the like). Other film formers can be used, such as cellulose nitrate or polyvinyl acetate. The labels are resistant to washing in bottle washing equipment. Labels on bottles can be removed by application of heat. C.J.W.

PAPER—COATED (HOT-MELT)

STURKEN, ROBERT C. Extrusion coating machine. U. S. patent 2,607,712. Filed Jan. 28, 1952. Issued Aug. 19, 1952. 4 claims. Assigned to Frank W. Egan & Company. [Cl. 154-1]

A machine is described, including counter-rotating rollers, which is adapted to bind a thin sheet of hot thermoplastic material to the surface of a strip of paper. The invention covers means for tangentially conforming the rollers to any plane of entry which the plastic sheet may assume. 2 figures. C.J.W.

PAPER SPECIALTIES

BOYD, THOMAS. Amides of ortho titanic acid. U. S. patent 2,579,413. Filed Oct. 21, 1949. Issued Dec. 18, 1951. 11 claims. Assigned to Monsanto Chemical Company. [Cl. 260-429]

One mole of titanium disulfide and four moles of a primary or secondary amine are heated one or two hours, with or without a solvent (e.g., benzene, xylene, carbon tetrachloride), at a temperature above 50°C. The amine may be aliphatic, aromatic, or cyclic (e.g., ethylamine and homologs, diethylamine and homologs, aniline, toluidine, cyclohexylamine, pyridine, quinoline, or the like). The products are useful as water repellents for paper and textiles. C.J.W.

BOYD, THOMAS. Preparation of esters of ortho titanic acid. U. S. patent 2,579,414. Filed Oct. 21, 1949. Issued Dec. 18, 1951. 6 claims. Assigned to Monsanto Chemical Company. [Cl. 260-429]

One mole of titanium disulfide and about 4.5 moles of an alcohol or a phenol are heated under substantially anhydrous conditions at the boiling point of the alcohol or at least at 100° (in the case of high-boiling alcohols) for various times depending on the nature of the reactants. The resulting esters are useful as water repellents for paper and textiles. C.J.W.

CAMILLI, GUGLIELMO, and MULLIGAN, LEO. Crepe paper cable insulation. U. S. patent 2,607,823. Filed Sept. 28, 1949. Issued Aug. 19, 1952. 6 claims. Assigned to General Electric Company. [Cl. 174-124]

In the construction of an electrical cable, a plurality of layers of calendered crepe paper is wound in a spiral about the conductor; such a cable can have bends of very short radius. 7 figures. C.J.W.

CAMILLI, GUGLIELMO, and MULLIGAN, LEO. Two-way stretch paper in insulated cables. U. S. patent 2,607,824. Filed Dec. 21, 1950. Issued Aug. 19, 1952. 4 claims. Assigned to General Electric Company. [Cl. 174-124]

An electrical cable includes an electrical conductor and a plurality of layers of crepe-paper tape spirally wound about the conductor. The crepe-paper tape has two crepings substantially perpendicular to each other so that each individual layer of the tape can stretch in two directions. The cable is capable of withstanding sharp cable bends. 7 figures. C.J.W.

ENGEL, EDWARD W., GIOLITO, ETZIO J., MCGARRY, JAMES A., MORRIS, VLON N., and WEIDNER, CHARLES L. Flexible pressure-sensitive adhesive products. U. S. patent 2,592,550. Filed Oct. 6, 1949. Issued April 15, 1952. 7 claims. Assigned to Industrial Tape Corporation. [Cl. 117-122]

A pressure-sensitive adhesive product consists of a base paper saturated (to contain 100% solids, based on its original weight) with an aqueous dispersion containing a mixture of butadiene-acrylonitrile and butadiene-styrene copolymers; after drying, the saturated paper is coated (0.5 to 5

ounces per square yard) with a normally tacky and pressure-sensitive mass containing rubber, hydrogenated rosin, calcium silicate, and mineral oil. The tapes are resistant to delamination. C.J.W.

GERSON, FRED. Envelope structure. U. S. patent 2,607,524. Filed June 25, 1949. Issued Aug. 19, 1952. 1 claim. [Cl. 229-72]

An envelope is provided with a corrugated partition which divides it into a plurality of larger and smaller pocket-shaped compartments; it is designed for hardware items and similar merchandise. 5 figures. C.J.W.

IRMSCHER, HANS O. Infusion package with expandable bottom manufacture. Canadian patent 485,145. Filed Nov. 18, 1949. Issued July 22, 1952. 9 claims. Assigned to National Tea Packing Company, Inc.

This corresponds to U. S. patent 2,571,138 (Oct. 16, 1951); *cf.* B.I.P.C. 22: 225. C.J.W.

MATHES, KENNETH N. Glass fiber reinforced crepe paper. U. S. patent 2,604,424. Filed Dec. 18, 1948. Issued July 22, 1952. 1 claim. Assigned to General Electric Company. [Cl. 154-53.6]

A composite tape product, suitable for wrapping electrical coils, consists of an elongated sheet of paper having lengthwise creping and having adhesively affixed on a surface thereof a plurality of elongated glass fibers individually spaced apart from one another from edge to edge of the sheet in substantially parallel relation to the lengthwise creping of the paper. The tape has favorable strength in one direction and elasticity perpendicular to this direction. 3 figures. C.J.W.

NEWMAN, DOUGLAS A. Manifolding. U. S. patent 2,606,775. Filed March 23, 1946. Issued Aug. 12, 1952. 1 claim. Assigned to Columbia Ribbon and Carbon Manufacturing Company, Inc. [Cl. 282-28]

A record sheet for manifolding purposes comprises a sheet of porous record paper having a print surface adapted to receive a record inscription, printed coating of lithographic varnish on at least a portion of the rear surface of the sheet, and a transfer composition which is applied only to the varnished areas. 4 figures. C.J.W.

O'MAHONEY, EUGENE D., and HUMFELD, GEORGE P. Phonograph record and method of manufacture. U. S. patent 2,606,851. Filed Nov. 12, 1948. Issued Aug. 12, 1952. 12 claims. Assigned to Radio Corporation of America. [Cl. 154-43; changed to 154-138]

The core of a phonograph record consists of felted paper pulp impregnated with zein; the surfaces are formed of paper sheets coated with a thermoplastic resinous material selected from the class consisting of ethylcellulose or copolymers of vinyl chloride and vinyl acetate. The zein may be modified by the addition of Vinsol resin or rosin. 2 figures. C.J.W.

SONNENBERG, RUDOLPH. Bottle cap. Canadian patent 485,309. Filed Aug. 30, 1947. Issued July 29, 1952. 12 claims. Assigned to Mid-West Bottle Cap Co.

A bottle cap for dairy bottles consists of a hood of metal foil capable of

ready distortion by the fingers, a paper liner substantially coextensive with the hood which is attached to the side adjacent the bottle, and a layer of microcrystalline wax interposed between the foil and the liner for adhesively adhering them together. 8 figures. C.J.W.

SONNENBERG, RUDOLPH. Bottle closure. U. S. patent 2,607,504. Filed Sept. 19, 1947. Issued Aug. 19, 1952. 2 claims. Assigned to Mid-West Bottle Cap Co. [Cl. 215-39]

A bottle cap for dairy bottles is formed of a laminate of metal foil and paper, with an intermediate layer of microcrystalline wax. The method of forming the cap is described. 8 figures. C.J.W.

TAWNEY, PLINY O. Soluble interpolymers of diallylic maleates and allylic chlorides. U. S. patent 2,592,211. Filed Nov. 12, 1948. Issued April 8, 1952. 6 claims. Assigned to United States Rubber Company. [Cl. 260-78.5]

The copolymers from diallyl maleate and allyl chloride, methallyl chloride, 2,3-dichloropropene, and the like possess flame-retardant properties and can be used as coating, impregnating, and laminating agents. C.J.W.

VANDERBILT, BYRON M., and BASCOM, FRANCES. Ketone soluble copolymer of methacrylonitrile and a diolefin. U. S. patent 2,589,166. Filed Dec. 31, 1946. Issued March 11, 1952. 8 claims. Assigned to Standard Oil Development Company. [Cl. 260-32.8]

A composition suitable for the impregnation of paper, cloth, or wood, and for the preparation of self-sustaining films or sheets is formed by the copolymerization in aqueous emulsion of 60 to 80 parts of methacrylonitrile and 20 to 40 parts of a conjugated diolefin (e.g., butadiene) in the presence of 0.1 to 1% of potassium persulfate or other catalyst and 0.1 to 5 parts by weight of an aliphatic mercaptan with 8 to 14 carbon atoms (e.g., dodecyl mercaptan). The temperature is about 40°C. C.J.W.

PHYSICAL TESTING—TAPE TESTER

HERRLINGER, PAUL W. Device for testing gummed tape. U. S. patent 2,604,783. Filed Jan. 27, 1950. Issued July 29, 1952. 12 claims. Assigned to The Gummed Products Company. [Cl. 73-150]

An apparatus is described for the measurement of the wet tensile strength of gummed tape under conditions simulating actual use. The tape is applied to a sealing surface at constant speed and under constant pressure; the time the tape is adhered to the sealing surface and the time at which the tape is stripped from the surface can be accurately controlled. 6 figures. C.J.W.

PHYSICAL TESTING—WOOD

HAGAN, OWEN C. Method of testing wood. U. S. patent 2,606,294. Filed Feb. 14, 1949. Issued Aug. 5, 1952. 1 claim. Assigned to California Cedar Products Company. [Cl. 250-83.3]

A method of determining the direction in which the fibers extend in a slab of fibrous wood consists in establishing a beam of light of a radiation frequency of about 9000 Angstrom units so as to penetrate the slab and recording the variations in the diffused light pattern of the emergent beam passing through the area being tested. 11 figures. C.J.W.

PULP

NUESSLE, ALBERT C., and HALL, WILLIAM P. Process for modifying wood pulp for rapid dispersion. U. S. patent 2,606,115. Filed March 23, 1946. Issued Aug. 5, 1952. 6 claims. Assigned to Joseph Bancroft & Sons Co. [Cl. 92-21]

The pulp sheets are treated with an aqueous solution of a strong acid and an organic nitrogen-containing base, dried in the conventional manner, and then cured by the application of heat to effect a chemical combination of the cellulose and the treating chemicals. The resulting pulp sheet is rapidly dispersed to individual fibers when immersed in hot water. The acids which may be used include sulfuric acid, various phosphoric acids, sulfamic acid, chlorosulfonic acid, and the like; the nitrogen-containing base may be urea and substituted ureas, formamide, acetamide, dicyanodiamide, and the like. A number of formulations are given. The fibers are said to be substantially flame, glow, and mildew resistant. C.J.W.

RAMIE

BYRNE, MAZY. Process of degumming bast fibers. U. S. patent 2,606,094. Filed Aug. 22, 1949. Issued Aug. 5, 1952. 8 claims. [Cl. 8-138; changed to 92-4]

Ramie fiber may be degummed by soaking for one to ten hours in ten parts of water containing 5% of Triton 770 concentrate, for five hours with 5% Detergent D-40 and 5% turpentine, or with water containing other wetting agents. C.J.W.

ROSIN

PRICE, CHARLES C. Stabilized rosin size. U. S. patent 2,606,842. Filed Oct. 25, 1947. Issued Aug. 12, 1952. 13 claims. Assigned to Hercules Powder Company. [Cl. 106-218]

A stabilized paste rosin size which is resistant to oxidation consists of rosin, saponified rosin, or mixtures thereof which contains from 0.5 to 3% of an aryl nitro compound. Examples of such compounds are *m*-dinitrobenzene, 1,3,5-trinitrobenzene, trinitrotoluene, a nitrated phenyl-2-naphthylamine, 2-nitro-1,4-diaminobenzene, and 2,4-dinitrophenylamine. C.J.W.

SHIPPING CONTAINERS

CAREY, TROY L., and LUBERSKY, ISADORE. Shipping case. U. S. patent 2,606,709. Filed July 3, 1948. Issued Aug. 12, 1952. 2 claims. Assigned to Fibreboard Products Inc. [Cl. 229-23]

The shipping case comprises a bottomless outer shell, an inner liner adapted to be telescoped within the outer shell and an outer inner liner which is adapted to be telescoped within the inner liner. 14 figures. C.J.W.

MCKENZIE, DENNIS I. Shipping container. Canadian patent 485,487. Filed May 12, 1949. Issued Aug. 5, 1952. 6 claims. Assigned to Moraine Box Company.

Wall re-enforcement members are provided for a shipping container which are so constructed that they can be assembled within the container in such a manner that they permit the opening of any selected side or end wall for insertion of the article to be packed. The supporting means carries the weight of the article and the container serves as a protective covering of the product during shipment. 13 figures. C.J.W.

STEARN, WILLIAM T. Cartons. Canadian patent 485,620. Filed July 18, 1949. Issued Aug. 12, 1952. 2 claims. Assigned to Celanese Corporation of America.

This is the same as U. S. patent 2,602,581 (July 8, 1952); *cf.* B.I.P.C. 22: 971. C.J.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

BRADY, CHARLES V., and OTTINGER, AUGUST F. Valved bag and its manufacture. Canadian patent 485,608. Filed July 13, 1949. Issued Aug. 12, 1952. 17 claims. Assigned to Bemis Bro. Bag Company.

The method of manufacture of a valved bag is claimed in which the valve sleeve extends over a substantial width of the bag for greater strength; the valve sleeve can be formed into a variety of valves. 32 figures. C.J.W.

SIDING

STOLP, CHARLES, JR. Masonry simulating roll siding and process of producing same. Canadian patent 485,232. Filed April 5, 1949. Issued July 29, 1952. 5 claims. Assigned to Allied Chemical & Dye Corporation.

This corresponds to U. S. patent 2,569,543 (Oct. 2, 1951); *cf.* B.I.P.C. 22: 228. C.J.W.

STARCH

YARBER, CLIFFORD J. Cold swelling starch process. U. S. patent 2,590,912. Filed Sept. 28, 1949. Issued April 1, 1952. 2 claims. Assigned to A. M. Meincke & Son, Inc. [Cl. 127-32]

A cold swelling starch is prepared by treating raw starch in water with monosodium phosphate until the mixture has a pH of 5.2 to 6.5 and heating the mixture above the boiling point under mechanical pressure which squeezes it into thin layers, which are then ground to the proper state of division. The resulting product is suitable for use in engine sizing. C.J.W.

SULFITE WASTE LIQUOR

GRANGAARD, DONALD H. Process of preparing phenolic material from lignin. Canadian patent 485,511. Filed June 30, 1948. Issued Aug. 5, 1952. 15 claims. Assigned to Sulphite Products Corporation.

This corresponds to U. S. patent 2,488,186 (Nov. 15, 1949); *cf.* B.I.P.C. 20: 294-5. C.J.W.

HULL, RICHARD O., and GRAY, ALLEN G. Benzoquinone-lignin addition for copper plating. Canadian patent 485,632. Filed May 12, 1944. Issued Aug. 12, 1952. 16 claims. Assigned to E. I. du Pont de Nemours and Company.

A copper plating bath containing 250 grams of copper sulfate pentahydrate and 75 grams of sulfuric acid (66° Bé.) per liter is treated with from 0.1 to 5 grams of benzoquinone and 0.5 to 10 grams of spent sulfite liquor (on a dry basis) per liter (0.02 to 1 gram of an antifoaming agent [e.g., decanol or oleic acid] is also added); the copper deposits from such a bath are smooth and free from nodules, hard, and of improved wear resistance. The

addition agents are stable, requiring only the addition of about 1.3 grams per liter each month for continued satisfactory operation. C.J.W.

ROSTEN, MIECZYSLAW M. Degassing of fermented waste sulphite liquor. Canadian patent 485,389. Filed May 25, 1944. Issued Aug. 5, 1952. 8 claims.

A conventional distillation column is provided with an additional length of column in which degasification is effected by the flow of heat and vapor from the distillation column below. The gas is removed from the top of the additional column. 1 figure. C.J.W.

SULFUR DIOXIDE

DU BOIS, HORACE A. Process for cooling sulfur burner gas. U. S. patent 2,598,116. Filed May 7, 1948. Issued May 27, 1952. 5 claims. Assigned to Paper Patents Company. [Cl. 183-120]

A main countercurrent trickle cooling column is provided, which has a side-branch, circulatory, heat-exchange cooling system. The latter derives liquid from the bottom of the main column, conducts the liquid through a heat exchanger, and restores the cooled liquid to an intermediate region in the main column. Cooling in the main column is effected with films of the cool liquid trickling over inert material which provides many interstitial circulatory spaces. A countercurrent tertiary cooling column operates with fresh makeup water which feeds the main trickle or second cooling main column and is located above the portion of the main column containing the circulating liquid. 2 figures. C.J.W.

TALL OIL

BARR, JAMES A., JR. Iron oxide flotation process. U. S. patent 2,607,486. Filed Aug. 30, 1946. Issued Aug. 19, 1952. 2 claims. Assigned to Armour and Company. [Cl. 209-166]

In the separation of iron oxide from siliceous gangue minerals, the ground minerals in water are subjected to the action of a collector consisting of sulfated and sulfonated tall oil fractions consisting predominantly of linoleic acid. Most of the abietic acid is removed from the tall oil before use. C.J.W.

FLOYD, DON E. Disproportionation of rosin acids and fatty acids. Canadian patent 485,460. Filed Jan. 2, 1951. Issued Aug. 5, 1952. 12 claims. Assigned to General Mills, Inc.

Tall oil or the rosin acid fraction of tall oil is heated with a nickel catalyst (nickel sulfide, Raney nickel, or nickel on kieselguhr) in a carbon dioxide atmosphere for three hours at 250°C. Most of the abietic acid is transformed into dehydroabietic acid and the linolenic acid is converted to linoleic acid. The reaction can also be carried out under pressure (e.g., 200 p.s.i.). The resulting products are suitable as emulsion stabilizers in emulsion polymerization processes. C.J.W.

ROSENCRANSE, CHARLES R. Bituminous emulsions for treatment of coal and methods of preparing the same. Canadian patent 485,784. Filed Jan. 10, 1949. Issued Aug. 12, 1952. 8 claims. Assigned (50%) to Joe F. Klaner, Jr.

This is the same as U. S. patent 2,431,891 (Dec. 2, 1947) and Reissue patent 23,462 (Feb. 12, 1952); *cf.* B.I.P.C. 22: 553. C.J.W.

WITTCOFF, HAROLD, and JORDAN, WESLEY A. Lacquer compositions containing the rosin ester of 2,2,6,6-tetramethylolcyclohexanol. U. S. patent 2,592,502. Filed Oct. 21, 1949. Issued April 8, 1952. 6 claims. Assigned to General Mills, Inc. [Cl. 106-172; changed to 106-173]

An ester of rosin and 2,2,6,6-tetramethylolcyclohexanol is formed by heating with a small quantity of zinc oxide in an atmosphere of nitrogen; the temperature was raised to 285° in three hours and held at that temperature for six hours, a vacuum being applied during the last two hours. The product can be used in the formulation of cellulose nitrate lacquers. In place of rosin, the mixture of rosin and fatty acids in tall oil can be used. C.J.W.

TRANSPARENT CONTAINERS

BELCHER, DANIEL. Bag construction. U. S. patent 2,605,040. Filed April 12, 1948. Issued July 29, 1952. 3 claims. Assigned to Bemis Bro. Bag Co. [Cl. 229-53; changed to 229-55] Canadian patent 485,607. Filed May 19, 1948. Issued Aug. 12, 1952. 2 claims. Assigned to Bemis Bro. Bag Co.

The lower two thirds of the bag is formed of lightweight material (e.g., cellophane) and the upper third consists of more rigid material which will support the closure mechanism; the latter is obtained by coating the bag material with a stiffening adhesive. 7 and 9 figures, respectively. C.J.W.

VACUUM COATING

BANCROFT, GEORGE H. Vacuum coating process and apparatus therefor. U. S. patent 2,584,660. Filed Sept. 24, 1949. Issued Feb. 5, 1952. 9 claims. Assigned to Eastman Kodak Company. [Cl. 117-93]

A vacuum coating apparatus is described by means of which such metals as aluminum, silver, gold, and the like can be applied to paper, textiles, foils, and plastic films. The metal is volatilized by means of an alternating electromagnetic field having a frequency of 5 to 50 kilocycles per second. 4 figures. C.J.W.

VISCOSITY

HUGHES, DONALD A. Viscosimeter. Canadian patent 485,206. Filed June 13, 1951. Issued July 29, 1952. 1 claim.

The viscometer comprises a driven rotating member responding in torque to the viscosity to be measured and a driver therefor; the range is shifted by electrical rather than mechanical means. 1 figure. C.J.W.

Book Review

Mosher, Robert H., ed. The technology of coated and processed papers. New York, Remsen Press Division, Chemical Publishing Co., Inc. 1952. 733 p.

This book is a companion volume to "Specialty papers—their properties and applications," which was reviewed in B.I.P.C. 20: 933. The first volume, as the title indicates, covered the various types of specialty papers, their manufacture and uses; the present volume covers the equipment and methods for producing and evaluating these papers. The scope of the book is indicated by the following chapter headings (in each case the author and his connection are given): Theory of high polymers and their application to the paper-converting industry (Ralph T. Nazarro, Texon, Inc.), 183 references; Rheology of paper coatings and instruments for the measurement of their flow properties (Philip H. Dewey, R-B-H Dispersions, Division of the Interchemical Corp.), 18 references; Water-soluble coatings (R. H. Mosher, Miami Valley Coated Paper Co.), 16 references; Solvent coatings and solvent recovery systems (M. C. Beren, Pyrotex Leather Co.), 35 references; Water-dispersion coatings (R. H. Mosher), 10 references; Hot-melt coatings (Bert C. Miller, Bert C. Miller, Inc.); Organosol and plastisol coatings (J. M. Perrone, Watson Standard Co.); Paper-converting machinery (Frank W. Egan, Frank W. Egan and Co.), 5 references; Printing inks and printing processes (R. H. Mosher), 30 references; Adhesives and the lamination process (F. C. Campins, Polymer Industries, Inc.); Saturating agents and paper saturation (A. N. Stull, American Resinous Chemicals Corp., W. Abramowitz, American Polymer Corp., and R. H. Mosher), 62 references; Machine production of printing papers and resin-treated specialties (R. H. Mosher), 31 references; Testing raw stock, raw materials, and specialty papers (R. H. Mosher), 139 references. These two volumes give the interested reader a wealth of information in a field which heretofore has not been sufficiently covered even in the periodical literature. It will be particularly interesting to those in the specialty-converting fields.

C. J. West

The Institute of Paper Chemistry has entered into an agreement with University Microfilms, Ann Arbor, Michigan, whereby University Microfilms is authorized to provide microfilm copies of this Bulletin to subscribers. To the extent that back issues were in print at the date of execution of the agreement, microfilm copies of these back issues can also be obtained. Sales by University Microfilms of films of this Bulletin are restricted to regular subscribers to the Bulletin. The microfilm is distributed only at the end of the volume year. The film is in the form of positive microfilm, and is furnished on metal reels, suitably labeled. Inquiries concerning purchase should be directed to:

University Microfilms
313 North First Street
Ann Arbor, Michigan

LIBRARY SERVICE

The Library of The Institute of Paper Chemistry is located in the Kimberly Memorial Building. Its purpose is to serve the students and the faculty of The Institute of Paper Chemistry and the chemists and technologists of the pulp and paper industry.

To contributing members it gives the following service:

A monthly bulletin is issued, listing all new books and periodicals added to the library and containing titles and abstracts of articles published during the previous month in the field of pulp and paper chemistry and technology. The annual index carries a list of periodicals currently received.

At a reasonable cost the librarian will furnish complete reference lists on chemical and technical problems for member mills, and will procure translations, photostats, or abstracts of the articles listed. Upon request, member mills working on special problems will be kept in touch with new publications related to their work.

Reviews of new publications pertaining to the field of pulp and papermaking will be included from time to time.

The library is open daily with the exception of Sundays from 8:15-5:00 and from 7:30-9:30. Saturday it closes at 5:00 o'clock.